

2022-23

Co-ordinators
initial Required.AC : 10 May, 2019

Item No. 4.20

UNIVERSITY OF MUMBAI

Sr. No.	Heading	Particulars
1	Title of the Course	BA in Multimedia and Mass Communication (BAMMC)
2	Eligibility for Admission	12 th pass.
3	Passing Marks	40%
4	Ordinances / Regulations (if any)	--
5	No. of Years / Semesters	03 years & 06 semesters
6	Level	P.G. / <input checked="" type="checkbox"/> U.G./ Diploma / Certificate (Strike out which is not applicable)
7	Pattern	Yearly / Semester <input checked="" type="checkbox"/> CBCS (Strike out which is not applicable)
8	Status	New / Revised <input checked="" type="checkbox"/> CBCS (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year <u>2019-20</u> in Progressive manner.

Date : April 26, 2019.

Signature :

Name of BOS Chairperson / Dean : Dr. Sunder Rajdeep

CHOICE BASED CREDIT SYSTEM

BA in Multimedia and Mass Communication (BAMMC) (Choice based)

Semester - I & II revised Syllabus to be sanctioned & implemented from 2019-20.

PROGRAM OUTCOME

1. The program considers media industries and their relationship to culture and society, and the understanding of how communication works. The program emphasizes the development of critical thinking, professional writing skills and effective oral communication.
2. The Communication and Media Studies major prepares students for a wide variety of careers in business and industry, advertising, public relations and journalism, or advanced study
3. This program will equip the learners with professional skills essential for making career in Entertainment industry, Cinema, Television, OTT Platforms, social media platforms etc.
4. Students would demonstrate the ability to apply rhetorical principles in a variety of creative, cinematic, organizational, professional and journalistic venues.
5. Knowledge, skills, and values that prepare them for future careers in our interconnected society, whether in mass media or advanced study
6. Learners would develop a global awareness of political, social and corporate issues influenced by communication sensitivity and skills.
7. Learners will understand mass media as a system of interrelated forces, including historical foundations, technological advances, economic dynamics, regulatory constraints, and ethical concerns.
8. This programme will also give them an improved sense of self-confidence and self-efficacy and an awareness of their responsibilities as professionals in their field
9. Learners will be able to create and design emerging media products, including blogs, digital audio, digital video, social media, digital photography, and multimedia.
10. They will be better equipped to grasp the complex relationship between communication/media theories and a diverse set of individual, social, and professional practices.
11. Learners will understand the underlying philosophical assumptions of, and be able to apply, communication research methods to address a range of media texts and audiences, production and technological practices, and relevant social issues.
12. Learners will comprehend the foundations, process, and practices of writing for and about the media, and demonstrate proficiency in writing across platforms.
13. Learners will be able to conceptualize, design, and produce one or more works in media based on effective principles and practices of media aesthetics for a target audience.



14. Learners will acquire the knowledge and skills required to pursue a career in the specialization of their choice.

FY BAMMC- 40 CREDITS

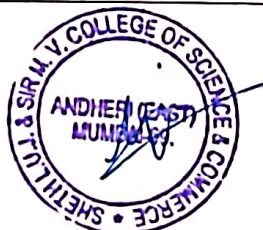
Semester I			
Title	Credit	Paper	Name of the Course
AECC	03	01	Effective Communication (EC -I)
AEEC	02	02	Foundation Course
DSC	04	03	Visual Communication
DSC CORE I	08 (4×2)	04	Fundamentals of Mass Com
DSC CORE II		05	Current Affairs
DSE	03	06	History of Media
	20		

AECC: Ability Enhancement Compulsory Course | AEEC: Ability Enhancement Elective Course | DSC: Discipline Specific Core | DSE: Discipline Specific Elective

Semester I		
Course code	Credits	Course Name
BAMMEC-101	03	Effective communication -I
BAMMFC-102	02	Foundation course -I
BAMMVC-103	04	Visual communication
BAMMFC-104	04	Fundamentals of Mass Communication
BAMMCA-105	04	Current Affairs
BAMMHM-106	03	History of Media

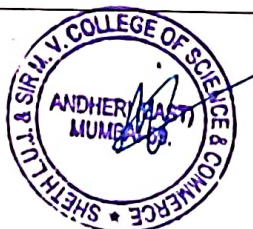
01	
PROGRAM	BAMMC
YEAR	FYBAMMC
SEMESTER	I
COURSE:	EFFECTIVE COMMUNICATION-I
COURSE CODE	BAMMEC-1-101
PAPER	1 (LANGUAGE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48

SEMESTER I



15

COURSE CODE		COURSE NAME & DETAILED SYLLABUS	
BAMMEC-1-101		EFFECTIVE COMMUNICATION -I	
COURSE OUTCOME :			
1. To make the students aware of functional and operational use of language in media. 2. To equip or enhance students with structural and analytical reading, writing and thinking skills. 3. To introduce key concepts of communications.			
MODULE	TOPICS	DETAILS	LECTURES
1		Introduction to Communication	
	1.The concept of communication	Communication, its concepts, process Importance of Communication in Media; Differences between Technical and General Communication; Barriers to Communication; Measures to Overcome the Barriers to Communication.	
	2.Types of Communication	Types of Communication; Verbal Communication-Importance of verbal communication- Advantages of verbal communication- Advantages of written communication; Significance of Non-verbal Communication.	
	3.Oral communication and media	Anchoring, voice modulation, interview, public speaking, skits/ plays, panel discussions, voice over, elocution, debates and group discussion	
	4.Listening Skills	Listening Process; Classification of Listening; Purpose of Listening; Common Barriers to the Listening Process; Measures to Improve Listening; Listening as an Important Skill in Work Place.	
2		Reading -English, Hindi OR Marathi	
	1.Types of Reading	Types of reading -skimming and scanning Reading -examples Newspaper / Magazine article, TV, feature and documentary, radio bulletins, advertising copy, press release in English, Hindi OR Marathi. Recognizing aspects of language particularly in media. Importance of spelling	
	2.Various aspects of Language	Recognizing various aspects of language particularly related to media , Vocabulary 100 media words	
	3.Grammar & Usage	Grammatical structure – spelling, structure of sentences, Active / Passive voice, tenses, Idioms , Phrases, proper usage of homophones, homonyms etc. (<i>Kindly provide practice session- Test, Quiz etc</i>)	
3		Thinking and Presentation	
	1.Thinking	1. Types of thinking (rational ,logical, critical , lateral etc) Errors in thinking ,Partialism, Time scale ,Egocentricity	



		2. Prejudices ,Adversary Thinking	
	2 .Presentation	Presentation, its importance , Steps in Making a Presentation; Delivering a Presentation	
4	Translation		
	1.Introduction To Translation	Concept, importance, need for translation, challenges in translation, problems and importance of Information and Technology in translation. Interpretation: Meaning, Difference between interpretation and translation	
	2.Interpretation	Interpretation: Meaning, Difference between interpretation and translation	
	3Role of a translator	Translator and his role in media, Qualities , Importance of Translator, Challenges faced by translator	
Total Lectures			48
BOS SYLLABUS COMMITTEE MEMBERS			
<ol style="list-style-type: none"> 1. Gajendra Deoda (Convenor) 2. Smita Jain. 3. Shobha Venktesh. 			
INTERNAL EVALUATION METHODOLOGY			
(any two to be selected- one individual and one group evaluation)			20 Marks
<ol style="list-style-type: none"> 1. Project/Assignment 2. Debate & Group discussion 3. Presentation 4. Skit /Play in any 2 languages 5. Translation of any famous short story or folk or fable 			
BIBLIOGRAPHY:			
<ol style="list-style-type: none"> 1. Word Power Made Easy by Norman Lewis 2. Six Hats of thinking by Edward de Bono Communication Skills by Sanjay Kumar 3. Wren and martin for English Grammar 			

02	
PROGRAM	BAMMC
YEAR	FYBAMMC
SEMESTER	I
COURSE:	FOUNDATION COURSE -I
COURSE CODE	BAMMFC-101
PAPER	2
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48



SEMESTER 1			
COURSE CODE	COURSE NAME & DETAILED SYLLABUS		
BAMMFC-101	FOUNDATION COURSE -I		
COURSE OUTCOME :			
1. To introduce students to the overview of the Indian Society. 2. To help them understand the constitution of India. 3. To acquaint them with the socio-political problems of India.			
Note:	Revised FC (Foundation Course) Syllabus sanctioned vide Agenda Item No. 4.49 of AC. 6.6.2012 for the B.A. Sem-1 / B.Sc. Sem-1 of University of Mumbai. The BMM BoS has unanimously decided to follow the syllabus for BAMM for Semester -I.		
MODULE	Topics	COURSE OUTCOME:	Lectures
Unit : 1 :	Overview of Indian Society:	Understand the multi-cultural diversity of Indian society through its demographic composition: population distribution according to religion, caste, and gender; Appreciate the concept of linguistic diversity in relation to the Indian situation; Understand regional variations according to rural, urban and tribal characteristics; Understanding the concept of diversity as difference.	05
Unit : 2 :	Concept of Disparity - 1:	Understand the concept of disparity as arising out of stratification and inequality; Explore the disparities arising out of gender with special reference to violence against women, female foeticide (declining sex ratio), and portrayal of women in media; Appreciate the inequalities faced by people with disabilities and understand the issues of people with physical and mental disabilities.	10
Unit : 3 :	Concept of Disparity - 2 :	Examine inequalities manifested due to the caste system and inter-group conflicts arising thereof; Understand inter-group conflicts arising out of communalism; Examine the causes and effects of conflicts arising out of regionalism and linguistic differences.	10
Unit : 4 :	The Indian Constitution :	Philosophy of the Constitution as set out in the Preamble; The structure of the Constitution-the Preamble, Main Body and Schedules; Fundamental Duties of the Indian Citizen; tolerance, peace and communal harmony as crucial values in strengthening the social fabric of Indian society; Basic features of the Constitution.	10
Unit : 5 :	Significant Aspects of Political Processes :	The party system in Indian politics; Local self-government in urban and rural areas; the 73rd and 74th Amendments and their implications for inclusive politics; Role and significance of women in politics.	10



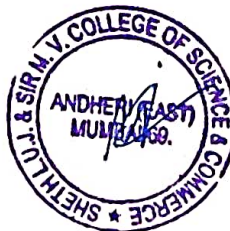
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Unit : 6 :	Growing Social Problems in India :	<p>a. Substance abuse- impact on youth & challenges for the future</p> <p>b. HIV/AIDS- awareness, prevention, treatment and services</p> <p>c. Problems of the elderly- causes, implications and response</p> <p>d. Issue of child labour- magnitude, causes, effects and response</p> <p>e. Child abuse- effects and ways to prevent</p> <p>f. Trafficking of women- causes, effects and response.</p> <p>Note: 15 lectures will be allotted for project guidance Unit Number 6 will not be assessed for the Semester End Exam</p>	15
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03	
PROGRAM	BAMMC
YEAR	FYBAMMC
SEMESTER	I
COURSE:	VISUAL COMMUNICATION
COURSE CODE	BAMMVC 103
PAPER	3
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48

SEMESTER I	
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMVC 103	VISUAL COMMUNICATION

COURSE OUTCOME			
<ol style="list-style-type: none"> To provide students with tools that would help them visualize and communicate. Understanding Visual communication as part of Mass Communication To acquire basic knowledge to be able to carry out a project in the field of visual communication To acquire basic knowledge in theories and languages of Visual Communication The ability to understand and analyze visual communication from a critical perspective 			
MODULE	TOPICS	DETAILS	LECTURES
	DEVELOPMENT OF VISUAL COMMUNICATION		



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		7. Maulana Abdul Kalam Azad	
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SYLLABUS DESIGNED BY

1. PROF. RANI D'SOUZA(CONVENOR)
2. DR. YATINDRA INGLE
3. MR. MITHUN PILLAI

INTERNAL EVALUATION METHODOLOGY

(any two to be selected- one individual and one group evaluation)

20 Marks

1. PROJECTS/ ASSIGNMENTS
2. ORAL & PRACTICAL PRESENTATIONS
3. GROUP INTERACTIONS
4. DEBATES & DISCUSSIONS
5. QUIZ

(Screening of Short Films and Documentaries are to done in the classroom with history being discussed)

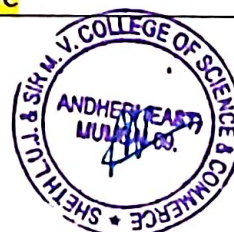
REFERENCE BOOKS/JOURNALS/MANUALS

1. MASS COMMUNICATION IN INDIA PAPERBACK – BY KEVAL J. KUMAR
2. JOURNALISM IN INDIA: HISTORY, GROWTH, DEVELOPMENT BY K. C. SHARMA
3. MEDIA'S SHIFTING TERRAIN: FIVE YEARS THAT TRANSFORMED THE WAY INDIA COMMUNICATES BY PAMELA PHILIPOSE
4. INDIAN NEWS MEDIA: FROM OBSERVER TO PARTICIPANT BY USHA M. RODRIGUES & MAYA RANGANATHAN
5. DOCUMENTARY FILMS AND INDIAN AWAKEN BY JAGMOHAN, PUBLICATIONS DIVISIONS MINISTRY OF BROADCASTING AND INFORMATION, GOVERNMENT OF INDIA
6. HISTORY OF INDIAN CINEMA PAPERBACK – 1 JAN 2012 BY RENU SARAN
7. HISTORY OF BROADCASTING IN INDIA BY DR. P. THANGAMANI
8. INDIA ON TELEVISION BY NALIN MEHTA(HARPER COLLINS PUBLISHERS)
9. PRESS IN INDIA: NEW HISTORY HARDCOVER – 1 AUG 1995 BY G.S.C. RAGUAVAN
10. COMMUNICATION IN HISTORY: STONE AGE SYMBOLS TO SOCIAL MEDIA BY DAVID CROWLEY (AUTHOR), PETER URQUHART (AUTHOR), PAUL HEYER (AUTHOR)

SEMESTER II

Semester II			
Title	Credit	Paper	Name of the Course
AECC	03	01	Effective Communication (EC -II)
AEEC	02	02	Foundation Course

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DSC	04	03	Content Writing	Language
DSC CORE III	(4×2)= 08	04	Introduction to Advertising	DSC-1B
DSC CORE IV		05	Introduction to Journalism	DSC-2B
DSE	03	06	Media Gender & Culture	
	20			

Semester II		
Course code	Credits	Course Name
BAMMEC-201	03	Effective communication -II
BAMMFC-202	02	Foundation course -II
BAMMCW-203	04	Content Writing
BAMMID-204	04	Introduction to Advertising
BAMMIJ-205	04	Introduction to Journalism
BAMMMGC-206	03	Media, Gender & Culture

01	
PROGRAM	BAMMC
YEAR	FYABMM
SEMESTER	II
COURSE:	EFFECTIVE COMMUNICATION -II
COURSE CODE	BAMMEC 201
PAPER	1
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48
	SEMESTER II
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMEC-201	Effective Communication Skills-II
Course Outcome:	
<ol style="list-style-type: none"> To make the students aware of use of language in media and organization. To equip or enhance students with structural and analytical reading, writing and thinking skills. To introduce key concepts of communications. 	Total Lectures: 48 hrs.



Module	Topics	Details	
1	Writing		
	1.Report writing	Report Writing (English, Hindi or Marathi) General report and News report writing - Basics and Format (Headline, Sub-headline, various type of report)	
	2. Organizational writing	Organizational writing : (English, Hindi or Marathi) Internal communication , E- mails - Email E-mail Etiquette; Overcoming Problems in E-mail Communication, Stake holder communication Circulars- Guidelines for writing a circular- Languages and writing style of a circular- Format of a circular; Notices- Purpose-Format- Important points to remember while writing a notice, Letters of complaint, claim and adjustment, Consumer grievance letters, Letters under the Right to Information Act, Press Release, Letter to the Editor.	
	4. Writing for Publicity materials	Writing for Publicity materials (English, Hindi or Marathi) Headline, sub- headline, Body copy, Slogan, Jingle, Radio spot	
2	Editing		
	Editing	Editing: (English, Hindi and Marathi) Principles of editing (Punctuation, Substitution of words, Restructuring of sentences, Re-organizing sentence sequence in a paragraph, Use of link words,	
		Principles of Coherence and Cohesion), writing synopsis, abstracts, précis writing, news paper editing and magazine editing.	
3	Paraphrasing and Summarizing		
	1. Paraphrasing	Meaning , how to use paraphrase in communication, Paraphrase in plagiarism , Translation	
	2. Summarization	Summarizing content , the points and sub- points and the logical connection between the points	
4	Interpretation of technical data		
	Interpret technical data	Read graphs, maps, charts, Write content based on the data provided	
Total Lectures			48
Internal evaluation methodology			25 Marks

Sr no	Project/Assignment
1	Clipping files on various current topics.
2	Publish letters to editors in news media.



3	Reporting of college events.
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Bibliography:

- Business Communication - Rhoda A. Doctor and Aspi H. Doctor
- Communication Skills in English – Aspi Doctor
- Teaching Thinking - Edward De Bono De Bono's
- Thinking Course – Edward De Bono Serious Creativity –
- Edward De Bono The Mind Map Book – Buzan Tony
- Becoming a Translator: An Introduction to the Theory and Practice of Translation - by Douglas Robinson
- A Textbook of Translation - by Peter Newmark, Newmark

Syllabus Designed by:
<ul style="list-style-type: none"> • Gajendra Deoda (Convenor) • Smita Jain • Deepak Kumar Tiwari (Subject expert).

02	
PROGRAM	BAMMAC
YEAR	FYBAMM
SEMESTER	II
COURSE:	FOUNDATION COURSE
COURSE CODE	BAMMFC 202
PAPER	2
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48
	SEMESTER II
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMFC-202	FOUNDATION COURSE

	Course Outcome		
	<ol style="list-style-type: none"> 1. To introduce students to the overview of the Indian Society. 2. To help them understand the constitution of India. 3. To acquaint them with the socio-political problems of India. 		
	<p>Note : Revised FC (Foundation Course) Syllabus sanctioned vide Agenda Item No. 4.49 of AC. 6.6.2012 for the B.A. Sem-1 / B.Sc. Sem-1 of University of Mumbai. The BMM BoS is unanimously decided to follow the same syllabus to BA in Multimedia and Mass Communication (BAMMC) Semester -II as it is.</p>		
Module	Topics	Details	Lectures
1	Globalisation	Understanding the concepts of liberalization,	07

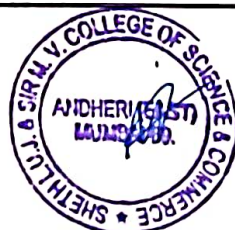


	and Indian Society	privatization and globalization; Growth of information technology and communication and its impact manifested in everyday life; Impact of globalization on industry: changes in employment and increasing migration; Changes in agrarian sector due to globalization; rise in corporate farming and increase in farmers' suicides.	
2	Human Rights	Concept of Human Rights; origin and evolution of the concept; The Universal Declaration of Human Rights; Human Rights constituents with special reference to Fundamental Rights stated in the Constitution.	10
3	Ecology	Importance of Environment Studies in the current developmental context; Understanding concepts of Environment, Ecology and their interconnectedness; Environment as natural capital and connection to quality of human life; Environmental Degradation- causes and impact on human life; Sustainable development- concept and components; poverty and environment.	10
4	Understanding Stress and Conflict	Causes of stress and conflict in individuals and society; Agents of socialization and the role played by them in developing the individual; Significance of values, ethics and prejudices in developing the individual; Stereotyping and prejudice as significant factors in causing conflicts in society. Aggression and violence as the public expression of conflict.	10
5	Managing Stress and Conflict in Contemporary Society	Types of conflicts and use of coping mechanisms for managing individual stress; Maslow's theory of self-actualisation; Different methods of responding to conflicts in society; Conflict-resolution and efforts towards building peace and harmony in society.	08
6	Contemporary Societal Challenges	<ol style="list-style-type: none"> Increasing urbanization, problems of housing, health and sanitation; Changing lifestyles and impact on culture in a globalised world. Farmers' suicides and agrarian distress. Debate regarding Genetically Modified Crops. Development projects and Human Rights violations. Increasing crime/suicides among youth. 	15
Note: 15 lectures will be allotted for project guidance Unit Number 6 will not be assessed for the Semester End Exam.			

03

PROGRAM

BAMMC



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3	Word Game/ Quiz	This is an exciting way to get learners engaged in vocabulary building
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Bibliography:

1. The Editor's Toolbox by Buck Ryan and Michael O' Donnell, Surjeet Publication
2. Writing for the Mass Media by James Glen Stovall
3. A Handbook of Rhetorical Devices by Robert A Harris

The Team:

1. Renu Nauriyal
2. Jitendra Nayak
3. Shreya Bhandary

04	
PROGRAM	BAMMC
YEAR	FYBAMM
SEMESTER	II
COURSE:	INTRODUCTION TO ADVERTISING
COURSE CODE	BAMMID 204
PAPER	4
TOTAL MARKS	100 (75 : 25)
NO OF LECTURES	48
	SEMESTER II
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMID-204	INTRODUCTION TO ADVERTISING

Learning Outcome:

Lectures: 48

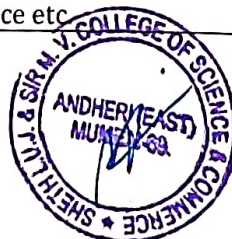
1. To provide the students with basic understanding of advertising, growth, importance and types.
2. To understand an effective advertisement campaigns, tools, models etc.
3. To comprehend the role of advertising , various departments, careers and creativity
4. To provide students with various advertising trends, and future.

Syllabus			
Module	Topics	Details	Lectures
1	Introduction to Advertising		18



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	1. Introduction to advertising	Evolution , importance, Features , benefits , limitation , effects and 5M's of advertising	02
	2. Types of advertising	Consumer, Industrial, Retail, Classified, Corporate ,Public service, ,Generic, National, Global, International, Social (CSR) and Advocacy	02
	3. Ethics and Laws in Advertising	Puffery, Subliminal, Weasel claim, Surrogate, Shocking ads , Controversial , Comparative, Advertising code of ethics, Regulatory bodies, Laws and regulations	04
	4. Social, Cultural and Economic impact of Advertising	Women and advertising, Children and advertising, Senior citizen and advertising , Pop Culture and advertising	04
	5. Theories	Stimulus theory, AIDA, Hierarchy ,Means-End Theory	06
2	Integrated marketing communication and tools		10
	1. Integrated marketing communication	Emergence, Role, Tools, Communication process, The IMC Planning Process	02
	2. Print Media and Out-of Home Media	Basic concepts, Types of Newspapers advertising , advantages and disadvantage of News paper advertising ,Magazines, Factors to consider for magazine advertising, Out-of-home Advertising, On- premise advertising , Transit advertising , Posters , Directory advertising	02
	3. Broadcast Media	Radio advertising Advantages and Disadvantages of Radio advertising , Television advertising and its Advantages and Disadvantages , Film advertising and Product placement - Advantages and Disadvantages	02
	4. Public Relation	Meaning of Public Relations, Types of public relations Difference between public relations and advertising, Difference between Publicity and Advertising, , Advantages and Disadvantages of Public Relations, Advantages and Disadvantages of Publicity	02
	5. Sales Promotion and Direct marketing	Growth and Types of Sales promotion, Advantages and Disadvantages Growth of Direct marketing and its tools Advantages and disadvantages	02
3	Creativity in advertising		14
	1. Introduction to Creativity	Importance of creative process, Creative strategy development Determining message theme, Big idea, positioning strategies, Types of appeals	06
	2. Role of different elements in ads	Logo, Jingle, Company signature, Slogan, tagline, illustration , Creating Radio commercial -Words, sounds , clarity , coherence etc	06



	3. Elements of copy	Headline, Sub headline , Layout , Body copy , Types of copy and slogan , creating story board	02
4	Types of advertising agency, department, careers and latest trends in advertising		06
	1. Types of advertising agency	Full service, Creative boutique, Media buying agency, In- house agency, Specialized Agencies and others	02
	2. Various departments in an agency	Account handling, Production, Art, Copy, Media, Public relation, Human resources, Finance and others	02
	3. Latest trends	Rural advertising ,Ambush advertising, Internet advertising , email advertising Advertainment, advertorial, mobile advertising	02
Total Lectures			48

Internal evaluation methodology 25 Marks

Sr no	Project/Assignment
1	Individual/ group project should be given to develop an advertising strategy on any product or service
2	Write a story board/ types of copy.
3	Big Idea – Group project

Bibliography:

- 1) 1. Advertising Principles and Practices (7th Edition) William D. Wells, John Burnett, Sandra Moriarty
- 2) Adland: Global History of advertising by mark Tungate
- 3) Copy paste : How advertising recycle ideas by Joe La Pompe
- 4) Indian Advertising: Laughter & Tears by Arun Chaudhuri
- 5) Adkatha The Story Of Indian Advertising by Halve Anand
- 6) Pandeymonium by Piyush Pandey
- 7) Introduction to Advertising – Amita Shankar
- 8) Contemporary Advertising – Loudon & Britta
- 9) Advertising – Pearson Education
- 10) www.afaqs.com
- 11) www.exchange4media.com
- 12) www.adweek.com

Syllabus Designed by:

- Shobha Venkatesh (Convenor)
- Dr. Hanif Lakdawala (Subject expert)
- Kiran R. Dalani (Subject expert)



AS

Sr.No.	Project Assignment	Reason/Justification
01	Animated Logos and Kinematic Typography	Creating Indents for Television, Movies or Online Videos. This project creates understanding of animation and how kinematics works with the elements. Allows deeper understanding of communication with simple objects. (Logos and Text)

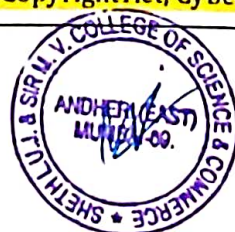
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Program	BAMMC
Year	SYBAMMC
Semester	III
Course:	CORPORATE COMMUNICATION and PUBLIC RELATIONS
Paper	02 (DSC-C1) CORE V
Course Code	BAMMC CCPR-302
Total Marks	100 (75 :25)
Number of Lectures	48

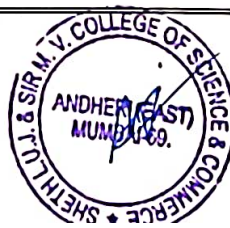
Course Outcome:

1. To provide the students with basic understanding of the concepts of corporate communication and public relations.
2. To introduce the various elements of corporate communication and consider their roles in managing media organizations.
3. To examine how various elements of corporate communication must be coordinated to communicate effectively in today's competitive world.
4. To develop critical understanding of the different practices associated with corporate communication with the latest trends and social media tools.

COUESE CODE	COURSE NAME	
BAMMC CCPR-302	CORPORATE COMMUNICATION and PUBLIC RELATIONS	
Syllabus		
Module	Details	Lectures
1	Foundation of Corporate Communication	14
	1. Introduction to Corporate Communication	Meaning , Need and Scope of Corporate Communication towards Indian Media Scenario 02
	2. Keys concept in Corporate Communication	<i>Corporate Identity:</i> Meaning and Features, <i>Corporate Image:</i> Meaning, Factors influencing Corporate Image, Corporate Image creation sustainability and restoration (Online and traditional) <i>Corporate Reputation and Management:</i> Meaning, Advantages of Good Corporate Reputation. 06
	3. Ethics and Law in Corporate Communication	Importance of Ethics in Corporate Communication, Professional Code of Ethics, Mass Media Laws: Defamation, Invasion of Privacy, Copyright Act, Cyber-crime and RTI. 06



2	Understanding Public Relations		16
	1.Introduction and Growth of Public Relations- Indian Scenario	Meaning, Definitions, Scope, Objective and Significance of Public Relation in Business. Tracing Growth of Public Relations, in India, Internal and External PR. Reasons for Emerging International Public Relations, Mergers/Collaborations/Joint Ventures between Indian and international public relations agencies, advantages and disadvantages of Public Relations.	06
	2.Role of Public Relations in various sectors	Healthcare, Entertainment, Banking and Finance, Real estate, Fashion and Lifestyle and Service.	04
	3.Theories and Tools of Public Relations	Gruntin's (4 models),Pseudo-events, Publicity , Propaganda, Persuasion, Situational theory , Diffusion theory and various tools of Public Relations (Press conference, Press release , Media Dockets, Advertorials, Sponsorship.	06
3	Corporate Communication and Public Relation's range of functions		10
	1.Media Relations	Introduction, Importance of Media Relations, Sources of Media Information, Building Effective Media Relations, Principles of Good Media Relations , Media analysis and evaluation	03
	2.Employee Communication	Introduction, Sources of Employee Communications, Organizing Employee Communications, Benefits of Good Employee Communications, Steps in Implementing An Effective Employee Communications Programme, Role of Management in Employee Communications	03
	3.Crisis Communication	Introduction, Impact of Crisis, Role of Communication in Crisis, Guidelines for Handling Crisis, Trust Building, Case studies such as Nestle Maggie, Indigo, Cadbury Dairy Milk, Niira Radia, Tylenol etc	04
4	Latest Trends, Tools and Technology Role of Social media in Corporate Communication and Public Relations		08
	1.Emerging trends, tools and technology	Introduction, Today's Communication Technology, Importance of Technology to Corporate Communication, pros and cons of technology used in Corporate Communication.	02
	2.New Media Tools	Website, Online press release, Article marketing, Online newsletters, Blogs	02
	3.Role of Social Media	Role of Social media as Influential marketing, Identifying brand threats, influence journalist's stories, swiftly react to negative press, Viral marketing, engaging and interacting, storytelling, E- Public Relations and its importance.	04
Total Lectures			48



404

Program	BAMMC
Year	SY BAMMC
Semester	IV
Course:	MASS MEDIA RESEARCH
Paper	(DSC-D3) CORE X
Course Code	BAMMC MMR-404
Total Marks	100 (75:25)
Number of Lectures	48

Course outcome

- To introduce students to debates in Research approaches and equip them with tools to carry on research
- To understand the scope and techniques of media research, their utility and limitations

COURSE CODE**COURSE NAME**

BAMMC MMR-404

MASS MEDIA RESEARCH

Syllabus

Module	Topic	Details	Lectures
Research In Media			
I	Introduction to mass media research	<ul style="list-style-type: none"> Relevance, Scope of Mass Media Research and Role of research in the media Steps involved in the Research Process Qualitative and Quantitative Research Discovery of research problem, identifying dependent and independent variables, developing hypothesis 	12
Design			
II	Research designs	<ul style="list-style-type: none"> Concept, types and uses Research Designs: <ol style="list-style-type: none"> Exploratory Descriptive and Causal. 	04
Data Collection			
III	Data - collection methodology	<ol style="list-style-type: none"> Primary Data - Collection Methods <ol style="list-style-type: none"> Depth interviews Focus group Surveys Observations Experimentations Secondary Data Collection Methods Literature review Designing Questionnaire and measurement techniques <ol style="list-style-type: none"> Types and basics of questionnaire Projective techniques Attitude measurement scales Sampling process Data Tabulation and Research report format 	18



AS

		Analysis	
IV	Content analysis	a. Definition and uses b. Quantitative and Qualitative approach c. Steps in content analysis d. Devising means of a quantification system e. Limitations of content analysis	05
		Application Of Research	
V	Application of research in mass media	a. Readership and Circulation survey b. TRP c. RRP d. Audience Research e. Exit Polls f. Advertising Consumer Research	05
		The Semiotics	
VI	The Semiotics of the Mass Media.	a. What is semiotics in media? b. Why is semiotics important? c. What are codes in semiotics? d. Semiotics and media	04
Total Lectures			48

BOS Syllabus Committee Members

1. Dr. Navita Kulkarni (Convener)
2. Dr. Hanif Lakdawala (Course Expert)
3. Prof. Rani D'Souza (Course Expert)

Internal Assessment: Methodology

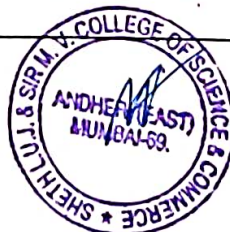
25 MARKS

Reference Books:

1. Research Methodology; Kothari: Wiley Eastern Ltd.
2. A Handbook Of Social Science Research: Dixon, Bouma, Atkinson OUP
3. Analysing Media Message: Reffe, Daniel; Lacy, Stephen And Fico, Frederick (1998); Lawrence Erlbaum associates.
4. Media Research Methods: Gunter, Brrie; (2000); Sage
5. Mass Media Research: Wimmer And Dominick
6. Milestones In Mass Communication: Research De Fleur

405

Program	BAMMC
Year	SYBAMMC
Semester	IV
Course:	Film Communication II
Paper	(DSC-D4) DRG
Course Code	BAMMC FCO-405
Total Marks	100 (75:25)
Number of Lectures	48

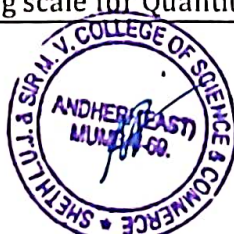


Book By Mark Shaw

4. The Adweek Copywriting Handbook: The Ultimate Guide To Writing Powerful Advertising And Marketing Copy From One Of America'S Top Copywriters Paperback – By Joseph Sugarman
5. The Copywriter's Handbook: A Step-By-Step Guide To Writing Copy That Sells Book By Robert Bly
6. Hey, Whipple, Squeeze This: The Classic Guide To Creating Great Ads
7. By Luke Words That Sell: More Than 6000 Entries To Help You Promote Your Products, Services, And Ideas Paperback – By Richard Bayan Sullivan , Sam Bennett , Edward Boches

COMPULSORY 02	
PROGRAM	BAMMC
YEAR	TYBAMMC -ADVERTISING
SEMESTER	V
COURSE:	ADVERTISING & MARKETING RESEARCH
COURSE CODE	BAMMC DRGA-502
PAPER	DRGA (COMPULSORY)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48

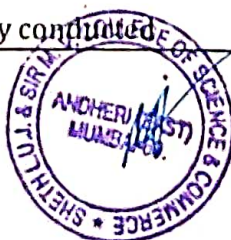
SEMESTER V		
COURSE CODE	COURSE NAME & DETAILED SYLLABUS	
BAMMC DRGA-502	ADVERTISING & MARKETING RESEARCH	
COURSE OUTCOME:		
<ol style="list-style-type: none"> 1. The course is designed to inculcate the analytical abilities and research skills among the students. 2. To understand research methodologies – Qualitative Vs Quantitative 3. To discuss the foundations of Research and audience analysis that is imperative to successful advertising. 4. To understand the scope and techniques of Advertising and Marketing research, and their utility. 		
MODULE	DETAILS	LECTURES
I	Fundamentals of Research What is Literature review 2. Statement of the problem 3. Aims and objectives' of the study 4. Relevant Research questions	02
2	Research design 1. Meaning, Definition, Need and Importance, 2. Scope of Research Design 3. 2. Types- Descriptive, Exploratory and Causal.	03
3	Preparing Questionnaire 1. Survey instruments 2. Designing the questioning using projective 3. technique for Qualitative research 4. Designing the Questionnaire using attitude 5. measuring scale for Quantitative research	03



4	Sampling	<ol style="list-style-type: none"> 1. Meaning of Sample and Sampling, 2. Process of Sampling 3. Methods of Sampling: Non Probability Sampling – Convenient, Judgment, Quota, Snow Ball, Probability Sampling – Simple Random, systematic, Stratified, Cluster, Multi Stage. 	06
5	Preparing data sheet and data processing	Preparation of data sheet in excels format and rearranging the data as per the requirement of the Statistical software such as SPSS and the statistical tool.	03
6	Data Analysis	Data collected are to be presented and analyzed. Students will have to choose the methods that best Suite the data collected. Data could be presented using tables, pie charts, bar charts, histogram etc. Data presented should be accompanied with the interpretation of the associations and relationships Among the data groups with the appropriate implication to the study or the unit of study. The summary of interpretation should provide answers to the research Questions.	03
7	Methods of Data Analysis	The interpretations based on Descriptive statistics should include mode, mean, median, Range, Variance, Standard deviation, Kurtosis, and Skewness. Any of the following multivariate analysis may be used such as Regression, Correlation, t test, factor analysis and discriminant analysis	04
8	Report Writing	<p>FORMAT OF RESEARCH REPORTS</p> <p>The research report shall have the following Components.</p> <ol style="list-style-type: none"> 1. Title page 2. Index 3. Introduction and Research objective 4. Industry Overview 5. Literature Review 6. Statement of the Problem 7. Statement of Hypothesis (Min two hypothesis) 8. Research Methodology and Research Design 9. Data Analysis and Interpretations 10. Findings 11. Conclusion 12. Suggestions 13. Annexure (questionnaires) 14. Bibliography 	06
9	Advertising Research	<ol style="list-style-type: none"> 1. Introduction to Advertising Research 2. Copy Research: a. Concept testing, b. Name testing, c. Slogan testing 4. Copy testing measures and methods: a. Free association, b. Direct questioning, c. Direct 6. Mail tests, d. Statement comparison tests, e. 	10



		<p>7. Qualitative interviews, f. Focus groups</p> <p>8. Pretesting:</p> <p>A. Print Pretesting: a. Consumer Jury Test, B. Portfolio test, C. Paired comparison test, D. Order-of-merit test, E. Mock magazine test, F. Direct mail test.</p> <p>G. Broad casting Pretesting: a. Trailer tests, b. Theatre tests, c. Live telecast tests, d. Clutter tests</p> <p>H. Challenges to pre-testing. Example: The Halo effect</p> <p>9. Post testing:</p> <p>a) Recall tests, b) Recognition test, c) Triple association test, d) Sales effect tests , e) Sales results tests, f) Enquires test</p>	
	Physiological rating scales	<p>1.Pupil metric devices, 2.Eye-movement camera, 3.Galvanometer, 4.Voice pitch analysis, 5. Brain pattern analysis</p>	03
10	10. Marketing Research	<p>1. Introduction to Advertising Research 8 2. New product research, 3. Branding Research, 4. Pricing research, 5. Packaging research, 6. Product testing</p>	05
		TOTAL LECTURES	48
INTERNALS (The objective of internal exercise is to help the learner acquire skills)			
25 MARKS			
Sr. no.	Project/Assignment		
01	Print Media Content Analysis		
02	Electronic Media Flip class presentation		
03	Field work Feature based in Mumbai or vicinity on any one of the issues of social justice		
BOS SYLLABUS SUB-COMMITTEE MEMBERS			
<p>1. Dr. Hanif Lakdawala (Convener)</p> <p>2. Prof. Payal Agarwal (Subject Expert)</p> <p>3. Prof Sangeeta Makkad (Subject Expert)</p>			
Guidelines for Internals:			
a. Internals should focus on conducting field survey on either Marketing or Advertising research with sample size not less than 125			
Producing the following:			
a. Complete Research report of the survey conducted			



	commerce on any product or Service
References	
1. Alan Tapp, Principles of Direct and Database Marketing - Financial Times - Prentice Hall 2000	
2. Drayton Bird, Commonsense Direct Marketing - Kogan Page 1996	
3. Jim Sterne and Anthony Prior - E-mail Marketing - John Wiley and Sons 2000	
4. Robin Fairlie, Database Marketing and Direct Mail - Exley Publications 1990	
5. Successful Direct Marketing Methods Hardcover – (7th edition) by Bob Stone (Author), Ron Jacobs (Author)	
6. Direct Marketing: Strategy, Planning, Execution by Edward L Nash	
7. The New Direct Marketing: How to Implement a Profitdriven Database, by Rajeev Batra	
8. Reinventing Interactive and Direct Marketing: Leading Experts Show How to ...by Stan Rapp	
9. Digital marketing (E commerce) – Vandana Ahuja.	

ELECTIVE 07	
PROGRAM	BAMMC
YEAR	TYBAMMC-Advertising
SEMESTER	V
COURSE:	Consumer Behaviour
COURSE CODE	BAMMC EACB 1507
PAPER	7 DSE 1A (ELECTIVE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48

SEMESTER V		
COURSE CODE	COURSE NAME & DETAILED SYLLABUS	
BAMMC EACB 1507	CONSUMER BEHAVIOUR	
COURSE OUTCOME:		
1. To understand the sociological & psychological perspective of consumer behaviour.		
2. To introduce students to the complexities of consumer behaviour, its importance in marketing & advertising.		
3. To sensitize students to the changing trends in consumer behaviour.		
MODULE	DETAILS	LECTURES
1	Module I	10
	1. INTRODUCTION TO CONSUMER BEHAVIOUR	1. Need to study Consumer Behaviour. 2. Psychological & Sociological dynamics of consumption. 3. Consumer Behaviour in a dynamic & digital world
	2. MARKETING & CONSUMER BEHAVIOUR	1. Segmentation Strategies – VALS 2. Communication process. 3. Persuasion - Needs & Importance. ELM. Persuasive advertising appeals.
2	Module II	08



TS

1.PSYCHOLOGICAL DETERMINANTS & CONSUMER BEHAVIOUR	<ol style="list-style-type: none"> 1. Motivation – Types & Theories – Maslow. 2. Attitude – Characteristics – Theories – Tricomponent. 3. Multiattitude Model. 4. Cognitive dissonance. 5. Personality - Facets of personality. <ol style="list-style-type: none"> i. Theories – Freud & Jung. ii. Personality traits & consumer behaviour. iii. Self-Concept. <p style="text-align: center;">Application of these theories in the marketing and consumer behaviour.</p>	
3	Module III	10
1.RELEVANCE OF LEARNING IN CONSUMER BEHAVIOUR	<ol style="list-style-type: none"> 1. Perception - Elements in perception. <ol style="list-style-type: none"> a. Subliminal perception. b. Perceptual Interpretation – Stereotyping in advertising. 2. Learning – Elements in Consumer Learning. 3. Behavioral & Classical Theory. 4. Cognitive Learning. 	
4	Module IV	10
1.SOCIO - ECONOMIC& CULTURAL DETERMINANTS OF CONSUMER BEHAVIOUR	<ol style="list-style-type: none"> 1. Family - Role of family in Socialization & Consumption – FLC. 2. Culture – Role & Dynamics. <ol style="list-style-type: none"> i. Subculture & its influence on consumption. ii. Changing Indian core values. iii. Cross culture consumer perspective. 3. Social group- primary and secondary and the role of Reference group & Consumer Behaviour. 4. Economic- social class as the economic 5. determinants of consumer behaviour 	
5	Module V	10
1. CONSUMER DECISION MAKING.	<ol style="list-style-type: none"> a. Process of decision making. b. Models of decision making. c. Opinion Leadership. <ol style="list-style-type: none"> 2. Diffusion & Adoption Process. <ol style="list-style-type: none"> a. Process of decision making. b. Models of decision making. c. Opinion Leadership. 3. Diffusion & Adoption Process. 	
Total Lectures		48
BOS SYLLABUS COMMITTEE MEMBERS		
<ol style="list-style-type: none"> 1. PROF. PAYAL AGGARWAL (Convenor) 2. PROF.DR. PADMAJA ARVIND (Subject Expert) 		



INTERNAL EVALUATION METHODOLOGY**25 MARKS**

1. Continuous Assignments
2. Oral & Practical Presentations
3. Projects
4. Class Test
5. Open Book Test
6. Group Interactions
7. Debates & Discussions
8. Quiz

Reference Book

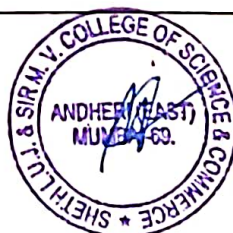
- Leon. Schiffman, Joseph Wisnerblit, S.Ramesh Kumar – Consumer Behaviour. Pearson 11th Edition.
- David.L.Louder, Albert Jdello Bitta, Consumer Behaviour- Concepts & Applications. Mcgrow Hill.
- Ramaniy Majumdar, Consumer Behaviour, Insights from Indian Market. Ph I Learning Pvt Ltd . Delhi.

ELECTIVE 08

PROGRAM	BAMMC
YEAR	TYBAMMC-Advertising
SEMESTER	V
COURSE:	DOCUMENTARY & AD FILM MAKING
COURSE CODE	BAMMC EADF 1508
PAPER	8 DSE 1A (ELECTIVE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48

SEMESTER V

COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMC EADF 1508	DOCUMENTARY & AD FILM MAKING
COURSE OUTCOME:	
<ol style="list-style-type: none"> 1. Understanding the planning involved in making audio visual communication effectively. 2. To prepare students for effective and ethical public communication. 3. To help students acquire basic skills in the practical aspects of Documentary and Ad Film making. 4. Equip students with skills to write and shoot effective Documentary and Ad film. 	



Berkeley: UC Press, pp.281-300.

- Hafez, K. (2007), 'Entertainment Culture as the Core of Media Globalization', in Hafez, K., The Myth of Media Globalization, Polity, pp.82-99.
- Philip R Cateora and John L Graham, International Marketing_Irwin McGraw Hill 1999. William F Arens and Courtland L Bovee, Contemporary Advertising-Irwin 1994. Philip Kotler and Eduardo L Roberto, Social marketing strategies for changing public behaviour-The free Press-1989. Jib Fowles, Advertising and popular culture-Sage Publications 1996 Mary Cross, Advertising and Culture-Prentice Hall 2001

ELECTIVE 02

PROGRAM	BAMMC
YEAR	TYBAMMC-ADVERTISING
SEMESTER	V
COURSE:	BRAND BUILDING
COURSE CODE	BAMMC EABB 1502
PAPER	2 DSE 1A (ELECTIVE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48

SEMESTER V		
COURSE CODE	COURSE NAME & DETAILED SYLLABUS	
BAMMC EABB 1502	BRAND BUILDING	
COURSE OUTCOME:		
1. 1. To understand the awareness and growing importance of Brand Building 2. 2. To know how to build, sustain and grow brands 3. 3. To know the various new way of building brands 4. 4. To know about the global perspective of brand building.		
MODULE	DETAILS	LECTURES
1	INTRODUCTION TO BRAND BUILDING, IDENTITY, PERSONALITY AND POSITIONING	10
	1. Introduction to Brand Building Meaning, Product v/s Brand. Why brand matters Process of Branding, Types of brand - National, Retail, Flanker, Distributor, Luxury , Global brands) Brand building blocks, Guidelines for effective branding, Brand Elements – types of brand elements	
	2. Brand Identity and Brand personality Consumer, Industrial, Retail, Classified, Corporate ,Public service, ,Generic, National, Global, International, Social (CSR) and Advocacy	



	3. Brand Positioning	Product class, Consumer segmentation, Perceptual mapping, Brand benefits and attributes, Cornerstones of positioning strategy Basis	02
2	BRANDING LEVERAGING ,STRATEGIES, EQUITY , MODELS		08
	1. Brand Leveraging	Line, Brand extension, Types of Brand Extensions, their advantages and disadvantages, Moving up/Down, Co- branding	
	2. Brand Strategies	Multi- branding, Mix branding, Hierarchy-Building Equity at Different Hierarchy Levels, Brand Product Matrix, Brand Architecture- Breadth of a Branding Strategy, Depth of a Branding Strategy.	
	3.Brand Equity and Models	Elements/ Sources. Measurement. (Brand awareness, Brand loyalty) Models: Yand R – Graveyard model Brand Asset Valuator, Brand Equity Ten, Inter brand Equity brand	
3	BRAND BUILDING THROUGH IMPERATIVE, GLOBAL AND CORPORATE IMAGE		10
	1. Brand Imperatives	Co-ordination across organization,, Co-ordination across geography, Re-branding, revitalizing, Rural Advertising and brands.	
	2.Global Brands	Emergence of global brands, Advantages and Disadvantages, Global leadership brands and position , Globalization	
	3.Corporate image Building through brands	Corporate Image in Contemporary Management,, Advertising and Corporate Image	
4	BRAND BUILDING THROUGH CSR ,BRANDS TO DIFFERENT SECTORS, BRAND LIFE CYCLE		10
	1.Brand Building through Corporate Social Responsibility	CSR as part of business environment management, How CSR activities can be used for Brand Building ,Social activities other than CSR to enhance the brand	
	2. Conception and Growth	Important factors in conception and various stages of growth and maturity of brands with various case studies	
	3.Branding in Different Sectors	Customer, Industrial, Retail and Service Brands	02
		TOTAL NUMBER OF LECTURES	48
INTERNALS (The objective of internal exercise is to help the learner acquire skills)			25 MARKS



Sr. no.	Project/Assignment
01	Individual / Group – Presentation Brand augmentation for a well-known brand and campaign planning - market planning, strategy, segmentation, selection, advertising objective, Creative execution of the campaign, Campaign evaluation and measuring effectiveness
BOS SYLLABUS COMMITTEE MEMBERS	
1. PROF. SHOBHA VENKATESH (CONVENER) 2. PROF.DR. RINKESH CHHEDA (SUBJECT EXPERT) 3. PROF PAYAL AGARWAL (SUBJECT EXPERT) 4. PROF. CHETAN DUBEY (INDUSTRY EXPERT)	
References :	
1. David, A Aker, Building strong brands, the free press, 1996 2. Al Ries and Laura Ries, the 11 Immutable Laws of internet branding, Harper Collins, 2001 3. Brand management – the Indian context – Y L R Moorthi 4. Strategic Brand Management by Kevin keller, M.G Parameshwaran, Issac Jacob 5. Brand positioning – Strategies for competitive advantage – Subroto Sengupta 6. Kumar, Ramesh S, Marketing and branding-Indian scenario,----, 2007 7. Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation (Paperback) - Damian Ryan - Gives an overview 8. What great brands do Building Principles that Separate the ..Denise Lee yohn . 9. John Philip Jones, what's in a brand-building brand equity through advertising, Tata McGraw Hill 10. Brand Equity: An Indian Perspective by SangeetaTrott (Author), Vinod V. Sople (Author)	

ELECTIVE 03	
PROGRAM	BAMMC
YEAR	TYBAMMC-Advertising
SEMESTER	V
COURSE:	AGENCY MANAGEMENT
COURSE CODE	BAMMC EAAM 1503
PAPER	3 DSE 1A (ELECTIVE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48

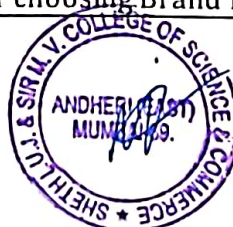
SEMESTER V	
COURSE CODE	COURSE NAME & DETAILED SYLLABUS
BAMMC EAAM 1503	AGENCY MANAGEMENT
COURSE OUTCOME:	



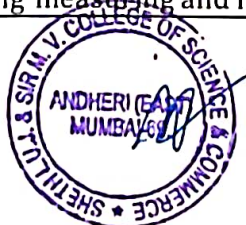
Social Marketing	Marketing; The difficulties of Social Marketing; The various subjects for Social Marketing; Effects of social marketing. (CASE STUDY)	
TOTAL NUMBER OF LECTURES		48
BOS SYLLABUS COMMITTEE MEMBERS		
<ol style="list-style-type: none"> 1. Prof. Gajendra Deoda (Convener) 2. Prof. Smita Jain (Subject Expert) 3. Prof. Ashish Mehta (Subject Expert) 		
Reference Books and material		
<ol style="list-style-type: none"> 1. Advertising by Amita Shankar 2. Advertising by London & Britta 3. Advertising by Ramaswamy & Namakeeman 		

ELECTIVE 02	
PROGRAM	BAMMC
YEAR	TYBAMMC-ADVERTISING
SEMESTER	VI
COURSE:	BRAND MANAGEMENT
COURSE CODE	BAMMC EABM 2602
PAPER	2 DSE 2A (ELECTIVE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48

SEMESTER VI		
COURSE CODE	COURSE NAME & DETAILED SYLLABUS	
BAMMC EABM 2602	BRAND MANAGEMENT	
COURSE OUTCOME		
<ol style="list-style-type: none"> 1. To understand the awareness and growing importance of brand management. 2. To know how to build, sustain and grow brands 3. To know the various sources of brand equity. 4. To know about the global perspective of brand management 		
MODULE	DETAILS	LECTURES
1	INTRODUCTION TO BRAND MANAGEMENT	12
	1.Introduction to Brand Management:	Meaning of Brand, Branding, Brand Management, Importance of Branding to Consumers, Firms, Brands v/s Products, Scope of Branding, Branding Challenges and Opportunities,
	2.Models	Strategic Brand Management Process, Customer Based Brand Equity model (CBBE)
	3.Brand Positioning:	Meaning, Importance, Objectives , Scope Basis of Brand Positioning, Brand Mantras Brand Repositioning and its characteristics, Point of Parity and Point of Differences
2	PLANNING AND IMPLEMENTING BRAND MARKETING PROGRAMS	12
	1. Brand Elements	Meaning, Criteria for choosing Brand Elements,



		Types of Brand Elements, Integrating Marketing Programs and Activities	
	2. Personalising Marketing	Experiential Marketing, One to One Marketing, Permission Marketing. Product Strategy: Perceived Quality and Relationship Marketing, Pricing Strategy: Setting Prices to Build Brand Equity Channel Strategy: Direct, Indirect Channels, Web Strategy	
	3. Cause Marketing to Build Brand Equity	Meaning of Cause Marketing, Advantages, Green Marketing Building Global Customer Based Brand Equity	
3	GROWING AND SUSTAINING BRAND EQUITY		12
	1. The Brand Value Chain- Model	Value stages and implication , What to track , designing brand tracking studies	
	2. Brand Equity	Meaning , Importance , Objectives, Sources of Brand Equity, Steps of Brand Building including Brand Building, Blocks, Leveraging Secondary Brand Associations to Build Brand Equity	
	3. Measuring Sources of Brand Equity	Qualitative Research Techniques: Projective Techniques: Completion, Comparison, Brand Personality and Values: The Big Five, Free Association Quantitative Research Techniques: Brand Awareness: Recognition, Recall, Brand Image, Brand Responses.	
4	MEASURING AND INTERPRETING BRAND PERFORMANCE		12
	1. Brand Performance and Management	Global Branding Strategies , Brand Audit, Role of Brand Managers	
	2. Brand Communication	Online Brand Promotions, Role of Brand Ambassadors , Celebrities , Loyalty Program	
	3. Managing Brands over Geographical Boundaries	Global Marketing Program, advantages and disadvantages, Cultivate Brand Partnership	
	TOTAL NUMBER OF LECTURES		48
BOS SYLLABUS SUB COMMITTEE MEMBERS			
<ol style="list-style-type: none"> 1. PROF. SHOBHA VENKATESH (CONVENER) 2. PROF. DR. RINKESH CHEDDA (SUBJECT EXPERT) 3. PROF. POONAM CHINTANKAR (SUBJECT EXPERT) 4. PROF. CHETAN DUBEY (INDUSTRY EXPERT) 			
INTERNALS (The objective of internal exercise is to help the learner acquire skills)			25 MARKS
PROJECT/ASSIGNMENT			
<ul style="list-style-type: none"> • Rebranding or Revitalizing of a well-known national brand or global brand 			
Reference books:			
1. Strategic Brand Management – Building measuring and managing brand equity Kevin			



	Conventional and Non-Conventional media. Branding and Positioning.	
5.	Case study- TATA Namak, Coco-Cola, Colgate toothpaste. Dabur Dantmanjan Tooth powder. Case study – Rural and Urban Babool Tooth Pest. Navratan Hail Oil.	
Total Lectures		48
BOS SYLLABUS SUB-COMMITTEE MEMBERS		
1. PROF. DR. PRIYADARSINI PODDAR (CONVENER) 2. PROF. DR. KOEL ROY CHOUDHURY (SUBJECT EXPERT) 3. PROF. DR. SAVITRI DHOLEY (SUBJECT EXPERT)		
INTERNALS (The objective of internal exercise is to help the learner acquire skills)		
25 MARKS		
Sr. no.	Project/Assignment	
01	Rural Economy and Education	
02	Rural economy and government policies	
03	Role of Modern Communication in Rural Economy	
04	Project on contrastive advertising campaign for the same product category in rural and urban set-up.	
05	Designing Advertising Campaign for rural area.	
06	Designing Communication strategies for Rural Market	
References:		
1. Chaudhuri C.M, Rural Economics, Jaipur, Sublime Publication 2. Dutt, Rudra and Sundaram, Indian Economy, New Delhi 3. Kashyap Pradeep and Raut Siddhartha, (2009), Rural Marketing Biztantra Publishers. ISBN: 978-81-317-6035-2 4. Dogra B. and Ghuman K. (2010), Rural Marketing Concepts and Practices, Tata McGraw-Hill. ISBN: 81-7992-085-2 5. Krishnamacharyulu C.S.G. and Ramakrishnan Lalitha (2011), Rural Marketing Text and Cases, Pearson Education ISBN:978-81-317-3263-2 6. Agricultural Marketing in India – S. S Acharya and N L Agarwal -Oxford and IBH Publishing Co Pvt. Ltd Calcutta.		

ELECTIVE 06	
PROGRAM	BAMMC
YEAR	TYBAMMC-Advertising
SEMESTER	VI
COURSE:	RETAILING & MERCHANDISING
COURSE CODE	BAMMC EARE 2606
PAPER	6 DSE 2A (ELECTIVE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48



15

SEMESTER VI		
COURSE CODE	COURSE NAME & DETAILED SYLLABUS	
BAMMC EARE 2606	RETAILING & MERCHANDISING	
COURSE OUTCOME:		
1 To introduce the students the concept of Retailing. 2 To make them understand the strategies of Retail Marketing. 3 To make the students aware about the need of retail consumers and their behavior. 4 To introduce the concept of merchandising. 5 Introducing social behavior and attitude of consumers over merchandising and Retailing. 6 Introduces students to different skills of merchandising. 7 Skills of retail communication and trends of information technology tools.		
MODULE	DETAILS	LECTURES
1	ABOUT FEATURES	10
	1.Introduction to the World of Retailing	
	2.Types of Retailers,	
	3.Identifying and Understanding Retail Consumer:	
	4.Social Factor	
	5.Format based on Pricing	
2	RETAIL COMMUNICATION AND IT	08
	1.Managing Communication for a Retail Store Offering:	
	2.Methods of Communication	
	3.IT for Retailing:	
	4.Trends & Innovation	
3	INTRODUCTION TO MERCHANDISING	10
	1.Concept of Retail Merchandising	
	2.Merchandise	



	Mix	Management, Merchandise Mix of Show off	
	3.Merchandise Displays	Concept of Merchandise Displays, Importance of Merchandise Displays	
	4.Space Management	Concept of Space Management, Role of IT in Space Management, Concept of Planogram	
	5.Formats based on Merchandise selection:	Merchandise selection as a competitive advantage, Specialty store retailing, Department store retailing, Super specialist, Niche specialist	
4	VISUAL AND ON-LINE MERCHANDISING		12
	1. Visual Merchandising	Merchandising: Meaning of Visual Merchandising, Objectives of Visual Merchandising, Growth of Visual Merchandising	
	2. Visual Merchandising in India	Visual Merchandising in India, Product Positioning and Visual Merchandising	
	3.Non Store Merchandising	Introduction, Objectives, Non-Store Retail Merchandising, Television retailing/home shopping, Product Presentation in Non-Store Retail Merchandising	
	4.Online Merchandising	Internet retailing/online shopping, Catalogue Management	
	5.Trends &Innovation	Analytics and Tools	
	Total Lectures		48
BOS SYLLABUS SUB-COMMITTEE MEMBERS			
<ol style="list-style-type: none"> 1. PROF. DR. PRIYADARSINI PODDAR (CONVENER) 2. PROF. YOGESH DHANJANI (SUBJECT EXPERT) 3. PROF. RAJESH NAIR (SUBJECT EXPERT) 			
Reading and References:			
Robolt, N. J, Concept and Cases in Retail and Merchandise Management. New York, Fairchild Fernie, J, Logistics and Retail Management. London, Kogan PageTepper, Bette K, Mathematics for Retail Buying.New York, Fairchild Drake, M .F, Retail Fashion Promotion and Advertising. New York, Macmillan Berman, Retail Management. New Jersey, Prentice Hall Lucas, G. H. , Retail Management, 3rd Edition, London, Pitman Publication Gercas , G. H , Retailing, Chennai, All India Publication Levy, Michael (2012)Retailing Management 8 th Ed. New York, NY: McGraw-Hill Donnellan, John (2016) Merchandising and Buying Management, 4 th Edition, Bloomsbury Publications.			

ELECTIVE 07	
PROGRAM	BAMMC
YEAR	TYBAMMC-Advertising
SEMESTER	VI
COURSE:	ENTERTAINMENT & MEDIA MARKETING



Lane

2. Keller , M.G Parmeswaran, Issac Jacob (3 rd edition)
3. Brand Management – Text and cases by Harsh Verma
4. Strategic Brand management – Indian Edition by Richard Elliot and Larry Percy
5. Brand Management – Principles and Practices by Kirti Dutta

ELECTIVE 03

PROGRAM	BAMMC
YEAR	TYBAMMC-ADVERTISING
SEMESTER	VI
COURSE:	MEDIA PLANNING & BUYING
COURSE CODE	BAMMC EAMP 2603
PAPER	3 DSE 2A (ELECTIVE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48

SEMESTER VI

COURSE CODE	COURSE NAME & DETAILED SYLLABUS	
BAMMC EAMP 2603	MEDIA PLANNING & BUYING	
COURSE OUTCOME:		
<ol style="list-style-type: none"> 1. To develop knowledge of major media characteristics 2. To understand procedures, requirements, and techniques of media planning and buying. 3. To learn the various media mix and its implementation 4. To understand budget allocation for a Media plan and fundamentals 		
MODULE	DETAILS	LECTURES
1	INTRODUCTION TO MEDIA PLANNING	06
1.Introduction to Media Planning	<ol style="list-style-type: none"> a. Basic Terms and Concepts b. The function of Media planning in advertising c. Objectives of MP. d. Role of Media planner e. Challenges in Media planning f. BARC and NCCS Grid g. Factors influencing media strategy decisions h. Criterion for selecting media vehicles 	
2.Negotiation skills in Media Buying	<ol style="list-style-type: none"> a. Negotiation Strategies b. Laws of Persuasion 	02
3.Media planning process	<ol style="list-style-type: none"> a. Situation analysis and Marketing strategy plan b. Media Briefing c. Media objectives and target audience analysis d. Media selection and strategy 	06

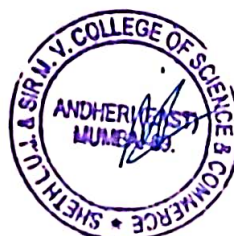


	e. Media budgeting f. Media Buying g. Evaluation	
3. Media Mix	Factors Affecting Media Mix Decision	02
4. Media Measurement	a. Reach b. Frequency c. GRPS/GVT Ratings d. TRP/TVT Ratings e. Impressions f. Cost efficiency g. Cost per thousand h. Cost per rating i. Circulation / Readership / AIR j. Selectivity Index k. Share of Voice	06
5. Sources of media research	a. Nielsen Clear Decision (NCD for Print) b. Broadcast Audience Research Council c. Audit Bureau of Circulation d. RAM e. Comscore - Digital f. Alexa	06
6. Selecting suitable Media option (Advantages and disadvantages)	a. Newspaper b. Magazine c. Television (National, Regional and Local) d. Radio e. Outdoor and out of home f. Transit g. Cinema Advertising	04
7. Media Buying	a. Newspapers b. Magazine c. Television d. Radio	04
8. Communication mix	Communication mix	02
9. Digital Media Buying	1. Buying Digital Advertising: An Overview Paid media, Owned media and Earned media). 2. Digital Sales Funnel 3. Direct buys from the websites / Impact Buys 4. Programmatic Buying: [DSP (Demand side platform) or RTB (Real time bidding)] 5. Advertising via Premium Publishers 6. Advertising via Networks and Exchanges 7. Affiliate Network (Click bank, Commission junction, adfuncky,	10



	7search.com) 8. The Local Publishing Market 9. OTT Platforms 10. Influencers Marketing or social media influencers 11. Content advertising 12. Native advertising 13. App installed campaign 14. Push notification 15. Google ads 16. Bing ads 17. Lead Progression a. Cost per impression b. Cost per click(CPC) c. Cost per lead (CPL) Cost per action (CPA) or pay per action (PPA) d. cost per conversion or Revenue sharing or cost per sale.	
	TOTAL NUMBER OF LECTURES	48
BOS SYLLABUS SUB-COMMITTEE MEMBERS		
1. PROF.DR. HANIF LAKDAWALA (CONVENER) 2. PROF DEEPALI MANJREKAR (SUBJECT EXPERT) 3. PROF SANGEETA MAKKAD (SUBJECT EXPERT)		
<u>GUIDELINE FOR INTERNALS:</u>		
Every student must submit a media plan for local television along with the rates, and detailed media scheduling. Product, Budget and city to be given by the faculty. a. Six hours workshop on Media scheduling software conducted by industry practitioner b. Two case studies on actual Media plans particularly "television media plan".		
<u>Reference Books and material:</u>		
<u>Advertising Media Planning. by Roger Baron, Jack Sissors, McGraw Hill, Seventh Edition</u> <u>2. Advertising Media Planning-. Jack Z Sissors, McGraw Hill 6th Edition</u>		

ELECTIVE 04	
PROGRAM	BAMMC
YEAR	TYBAMMC-Advertising
SEMESTER	VI
COURSE:	ADVERTISING & SALES PROMOTION
COURSE CODE	BAMMC EAAS 2604
PAPER	4 DSE 2A (ELECTIVE)
TOTAL MARKS	100 (75:25)
NO OF LECTURES	48



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AC- _____
Item No. _____

UNIVERSITY OF MUMBAI



Syllabus for F.Y.B.Sc.

Programme: B.Sc.

Subject : Information

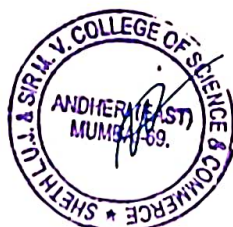
Technology

Semester – I and II

(CBCS)

**(Choice Based Credit System with effect from the
academic year 2022-2023)**

**(To introduce with effect from the academic year
2022-2023)**



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Annexure I

UNIVERSITY OF MUMBAI



Syllabus for Approval

Sr. No.	Heading	Particulars
1	Title of the Programme	F.Y.B.Sc. Sem. I & II (Information Technology)
2	Eligibility for Admission	Ordinance no. O.5051 Circular no. UG/284 of 2007 dated 16th June 2007
3	Passing Marks	40%
4	Ordinances / Regulations (if any)	As applicable for all B.Sc. Courses
5	No. of Years / Semesters	Three years – Six Semesters
6	Level	P.G. / U.G. / Diploma / Certificate- (Strike out which is not applicable)
7	Pattern	Yearly / Semester (Strike out which is not applicable)
8	Status	Revised / New / Amended (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year 2022-2023

Signature
Chairman Name Dr. R. Srivaramangai
BOS Chairman in Information Technology



Dr. Anuradha Majumdar
Dean, Science and Technology

Annexure I

PREAMBLE

The B.Sc. Information Technology programme was started in 2001 with an aim to make the students employable and impart industry oriented training. The main objectives of the course are:

- To think analytically, creatively and critically in developing robust, extensible and highly maintainable technological solutions to simple and complex problems.
- To apply their knowledge and skills to be employed and excel in IT professional careers and/or to continue their education in IT and/or related post graduate programmes.
- To be capable of managing complex IT projects with consideration of the human, financial and environmental factors.
- To work effectively as a part of a team to achieve a common stated goal.
- To adhere to the highest standards of ethics, including relevant industry and organizational codes of conduct.
- To communicate effectively with a range of audiences both technical and non-technical.
- To develop an aptitude to engage in continuing professional development.

The new syllabus is aimed to achieve the objectives. The syllabus spanning three years covers the industry relevant courses. The students will be ready for the jobs available in different fields like:

- Software Development (Programming)
- Website Development
- Mobile app development
- Internet of Things
- Software Testing
- Networking
- Database Administration
- System Administration
- Cyber Law Consultant
- GIS (Geographic Information Systems)
- IT Service Desk
- Security
- Technical communication skills
- Green IT

And many others



Annexure I

Name of Dean (Dean, Faculty of Science and Technology) : Dr. Anuradha Majumdar

Name of Associate Dean (Associate Dean, Faculty of Science and Technology) Prof. Shivram Garje

Name of Chairperson (BoS) : Dr. Mrs. R. Srivaramangai

Member(BoS) : Dr. Hiren Dand

Member(BoS) : Dr. Abhijeet Kale

Member(BoS) : Dr. Santosh Singh

Member(BoS) : Dr. Rajendra Patil

Member(BoS) : Dr. Mandar Bhav



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Annexure I

Semester 1			
Course Code	Course Type	Course Title	Credits
USIT101	Core Subject	Programming Principles with C	2
USIT102	Core Subject	Digital Logic and Applications	2
USIT103	Core Subject	Fundamentals of Database Management Systems	2
USIT104	Core Subject	Computational Logic and Discrete Structure	2
USIT105	Ability Enhancement Skill Course	Technical Communication Skills	2
USIT1P1	Core Subject Practical	Programming Principles with C Practical	2
USIT1P2	Core Subject Practical	Digital Logic and applications Practical	2
USIT1P3	Core Subject Practical	Fundamentals of Database Management Systems Practical	2
USIT1P4	Core Subject Practical	Computational Logic and Discrete structure Practical	2
USIT1P5	Ability Enhancement Skill Course Practical	Technical Communication Skills Practical	2
Total Credits			20

Semester 2			
Course Code	Course Type	Course Title	Credits
USIT201	Core Subject	Object Oriented Programming with C++	2
USIT202	Core Subject	Fundamentals of Micro Processor and Microcontrollers	2
USIT203	Core Subject	Web Applications Development	2
USIT204	Core Subject	Numerical Methods	2
USIT205	Ability Enhancement Skill Course	Green IT	2
USIT2P1	Core Subject Practical	Object Oriented Programming with C++ Practical	2
USIT2P2	Core Subject Practical	Fundamentals of Micro Processor and Microcontrollers Practical	2
USIT2P3	Core Subject Practical	Web Applications Development Practical	2
USIT2P4	Core Subject Practical	Numerical Methods Practical	2
USIT2P5	Ability Enhancement Skill Course Practical	PL/SQL Practical	2
Total Credits			20



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Annexure I

SEMESTER I

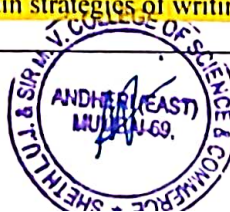
Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Technical Communication Skills		Course Code: USIT105	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

- To recognize the importance of various types of communication in technical set up.
- To understand the dynamics in different forms of formal communication.
- To learn about active listening and the art of giving presentations and interviews.
- To learn the art of business writing and ethics in business communication across functional areas.
- To evaluate, analyze and interpret technical data.

Unit	Details	Lectures
I	<p>Fundamentals of Technical Communication Introduction, The process of communication, Language as tool of communication, levels of communication, The flow of communication, Communication Networks, The importance of technical communication</p> <p>Barriers to communication Definition of Noise, classification of Barriers</p> <p>Non-verbal Communication Introduction, Definition, significance of nonverbal, forms of non -verbal communication, types of non-verbal communication</p>	12
II	<p>The Seven Cs of Effective Communication: Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness</p> <p>Conversations Introduction, Importance of Business conversion, Essential of Business conversion, Conversation Management</p> <p>Meeting and conferences Introduction, Purpose of Meeting, planning a meeting, Meeting Process, Leading effective meeting, Evaluating meeting, planning conference, teleconferencing</p> <p>Group Discussion and team presentation Introduction, Benefits of GD, Workplace GD guidelines, Functional and non functional roles in GD, Improving group performance, Assessment of group discussion ,Team presentation</p> <p>Email communication Introduction, Advantages of email, problems in email communication, Email etiquettes, Techniques of writing Effective Email</p>	12
III	<p>Active Listening Introduction, Type of listening, Traits of good listener, Active vs Passive listening, Implication of effective listening</p> <p>Effective presentation Strategies Introduction, Defining purpose, Analyzing audience and Locale, Organizing contents, preparing outline, Visual Aids, Understanding Nuances of delivery, Kinesics</p> <p>Interview Introduction, objectives, types of interview, job interviews</p>	12
IV	<p>Business writing Introduction, Importance of written Business, Five main strategies of writing business messages</p>	12



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Annexure I

	<p>Business correspondence Business letter writing, common component of Business letter, Strategies for writing body of a letter, Types of Business letter, writing memos</p> <p>Business reports and proposal What is report? Steps in writing routine Business report, parts of report, corporate reports and Business proposals</p> <p>Careers and Resume Introduction to career building, resume format, traditional, electronic and video resumes, sending resume, follow up letters and online recruitment process</p>	
V	<p>Communication across Functional areas Financial communication, MIS</p> <p>Ethics in Business Communication Ethical communication, Values, ethics and communication, ethical dilemmas facing manager, strategic approaches to corporate ethics</p> <p>Creating and Using Visual Aids Object, Models, Handouts, Charts and Graphs, Text Visuals , Formatting Computer generated charts, graphs and visuals</p>	12

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Technical communication : principles and practices	Meenakshi Raman & Sangeeta Sharma	Oxford Higher Education		
2.	Business Communication	Meenakshi Raman & Prakash Singh	Oxford- Higher Education	2 nd edition	2006
3.	Effective Business Communication	Herta Murphy, Herbert Hildebrandt, Jane Thomas	Tata McGraw Hill	7 th edition	2008
4.	Professional Communication	Aruna Koneru	McGraw Hill		2008
5.	Business and Professional Communication Plans, Processes and Performance	James R. DiSanza Nancy J. Legge	Pearson Education	4 th Edition	
6.	Storytelling with data-a data visualization guide for business professionals	Cole Nussbaumer knaflic	Wiley		

Course Outcome:

Learners will be able to,

1. Analyze, synthesize and utilize the process and strategies from delivery to solving communication problem.
2. Learn the communication methodologies at workplace and learning about importance of team collaboration.
3. Learn about different technical communication such as presentations and interviews.
4. Understand and apply the art of written communication in writing reports, proposals.
5. Ground rules of ethical communication and MIS.
6. Understand the functions of graphs, maps, charts.



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Annexure I

B. Sc (Information Technology)		Semester – I	
Course Name: Technical Communication Skills Practical		Course Code: USIT1P5	
Periods per week (1 Period is 50 minutes)		3	
Credits		2	
Evaluation System		Hours	Marks
	Practical Examination	2½	50
	Internal	--	--

Course Objectives:

- To express thoughts feelings and ideas of learners by using features of MS Word.
- To articulate formal and informal reports.
- To analyze and interpret data and learn visualization of data.
- To learn effective tools of presentation.

1.	Use of word processing tools for communication.
a.	Use of various tools like spell checker, header, footer etc.
b.	Make formal and informal letters, creating resume.
c.	Designing brochures and flyers using templates in word.
2.	Writing reports, minutes of meeting, action plan.
3.	Use of spreadsheet for data interpretation and data analysis.
4.	Basic use of what if analysis using excel.
5.	Visual Representation of data using excel – pie chart ,line chart, bar chart etc.
6.	Summarization of data using of pivot tables and chart in excel.
7.	Use of presentation tools like PowerPoint for communication and presentation skills.
8.a.	Basic communication covering the following topics:- Meeting people, Asking Questions and Design of questionnaire.
8.b.	Using netiquettes in online mode of communication using Zoom / Google Meet / MS-Teams etc.
9.	Use of Mail etiquette for writing effective mails.
10.a.	Use of Mail merge and its features.
10.b.	Creating profile using LinkedIn.

Course Outcome:

Learners will be able to:

1. Use different forms of digital mediums for effective communication.
2. Create technical documents and format existing documents for effective communication.
3. Learn to use graphical tools for better visualization.
4. Create business presentation effectively.
5. Visualize the data from pictorial representations.



Annexure I

SEMESTER II

Annexure I

B. Sc (Information Technology)		Semester – II	
Course Name: Green IT		Course Code: USIT205	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2	75
	Internal	--	25

Course Objectives:

- To understand the concept of Green Technology.
- To learn Green IT regulating Green IT and different standards.
- To understand the concept of minimizing power utilization in technology.
- To know about Green PCs, Green notebooks and servers and Green data centers.
- To know how the way of work is changing and understand implementation of Paperless work.
- To know the concept of Recycling.
- To understand Metrics for Green IT.

Unit	Details	Lectures
I	<p>Overview to Green IT: Problems: Toxins, Power Consumption, Equipment Disposal, Company's Carbon Footprint: Measuring, Details, reasons to bother, Plan for the Future, Cost Savings: Hardware, Power.</p> <p>Regulating Green IT: Laws, Standards and Protocols Introduction, The Regulatory Environment and IT Manufacturers RoHS, REACH, WEEE, Legislating for GHG Emissions and Energy Use of IT Equipment. Nonregulatory Government Initiatives, Industry Associations and Standards Bodies, Green Building Standards, Green Data Centres, Social Movements and Greenpeace.</p>	12
II	<p>Minimizing Power Usage: Power Problems, Monitoring Power Usage, Servers, Low-Cost Options, Reducing Power Use, Data De-Duplication, Virtualization, Management, Bigger Drives, Involving the Utility Company, Low Power Computers, PCs, Linux, Components, Servers, Computer Settings, Storage, Monitors, Power Supplies, Wireless Devices, Software.</p> <p>Cooling: Cooling Costs, Power Cost, Causes of Cost, Calculating Cooling Needs, Reducing Cooling Costs, Economizers, On-Demand Cooling, HP's Solution, Optimizing Airflow, Hot Aisle/Cold Aisle, Raised, Floors, Cable Management, Vapour Seal, Prevent Recirculation of Equipment Exhaust, Supply Air Directly to Heat Sources, Fans, Humidity, Adding Cooling, Fluid Considerations, System Design, Datacentre Design, Centralized Control, Design for Your Needs, Put Everything Together.</p>	12
III	<p>Greening IT: Green PCs, Notebooks and Servers, Green Data Centres, Green Cloud Computing, Green Data Storage, Green Software, Green Networking and Communications.</p> <p>Changing the Way of Work: Old Behaviours, starting at the Top, Process Reengineering with Green in Mind, Analysing the Global Impact of Local Actions, Steps: Water, Recycling, Energy, Pollutants, Teleworkers and Outsourcing, Telecommuting, Outsourcing, how to Outsource.</p> <p>Going Paperless: Paper Problems, The Environment, Costs: Paper and Office, Practicality, Storage, Destruction, Going Paperless, Organizational Realities, Changing Over, Paperless Billing, Handheld Computers vs. the Clipboard, Unified Communications, Intranets, What to Include, Building an Intranet, Microsoft Office SharePoint Server 2007, Electronic Data Interchange (EDI), Nuts and Bolts, Value Added Networks, Advantages, Obstacles.</p>	12



Annexure I

IV	<p>Recycling: Means of Disposal, Recycling, Refurbishing, Make the Decision, Life Cycle, from beginning to end, Life, Cost, Green Design, Recycling Companies, Finding the Best One, Checklist, Certifications, Hard Drive Recycling, Consequences, cleaning a Hard Drive, Pros and cons of each method, CDs and DVDs, good and bad about CD and DVDs disposal, Change the mindset, David vs. America Online.</p> <p>Hardware Considerations: Certification Programs, EPEAT, RoHS, Energy Star, Computers, Monitors, Printers, Scanners, All-in-Ones, Thin Clients, Servers, Blade Servers, Consolidation, Products, Hardware Considerations, Planned Obsolescence, Packaging, Toxins, Other Factors, Remote Desktop, Using Remote Desktop, Establishing a Connection.</p>	12
V	<p>Greening Your Information Systems: Initial Improvement Calculations, Selecting Metrics, Tracking Progress, Change Business Processes, Customer Interaction, Paper Reduction, Green Supply Chain, Improve Technology Infrastructure, Reduce PCs and Servers, Shared Services, Hardware Costs, Cooling.</p> <p>Staying Green: Organizational Check-ups, Chief Green Officer, Evolution, Sell the CEO, SMART Goals, Equipment Check-ups, Gather Data, Tracking the data, Baseline Data, Benchmarking, Analyse Data, Conduct Audits, Certifications, Benefits, Realities, Helpful Organizations.</p>	12

Books and References:

Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Green IT	Toby Velte, Anthony Velte, Robert Elsenpeter	McGraw Hill		2008
2.	Harnessing Green IT: Principles and Practices	San Murugesan, G. R. Ganadharan,	Wiley & IEEE.		
3.	Green Data Center: Steps for the Journey	Alvin Galea, Michael Schaefer, Mike Ebbers	Shroff Publishers and Distributors		2011
4.	Green IT	Deepak Shikarpur	Vishwkarma Publications,		2014
5.	Green Computing Tools and Techniques for Saving Energy, Money and Resources	Bud E. Smith	CRC Press		2014
	Green Computing and Green IT Best Practice	Jason Harris	Emereo		

Course Outcomes:

Learners will be able to,

- Understand the concept of Green IT and problems related to it.
- Know different standards for Green IT.
- Understand the how power usage can be minimized in Technology.
- Learn about how the way of work is changing.
- Understand the concept of recycling.
- Know how information system can stay Green Information system.



SEMESTER IV

Academic Council 11/05/2017

Item No: 4.286

UNIVERSITY OF MUMBAI



Syllabus for S.Y.B.Sc.

Programme: B.Sc.

Course: Information Technology

with effect from the academic year

2017 – 2018



Semester – 3			
Course Code	Course Type	Course Title	Credits
USIT301	Skill Enhancement Course	Python Programming	2
USIT302	Core Subject	Data Structures	2
USIT303	Core Subject	Computer Networks	2
USIT304	Core Subject	Database Management Systems	2
USIT305	Core Subject	Applied Mathematics	2
USIT3P1	Skill Enhancement Course Practical	Python Programming Practical	2
USIT3P2	Core Subject Practical	Data Structures Practical	2
USIT3P3	Core Subject Practical	Computer Networks Practical	2
USIT3P4	Core Subject Practical	Database Management Systems Practical	2
USIT3P5	Core Subject Practical	Mobile Programming Practical	2
Total Credits			20

Semester – 4			
Course Code	Course Type	Course Title	Credits
USIT401	Skill Enhancement Course	Core Java	2
USIT402	Core Subject	Introduction to Embedded Systems	2
USIT403	Core Subject	Computer Oriented Statistical Techniques	2
USIT404	Core Subject	Software Engineering	2
USIT405	Core Subject	Computer Graphics and Animation	2
USIT4P1	Skill Enhancement Course Practical	Core Java Practical	2
USIT4P2	Core Subject Practical	Introduction to Embedded Systems Practical	2
USIT4P3	Core Subject Practical	Computer Oriented Statistical Techniques Practical	2
USIT4P4	Core Subject Practical	Software Engineering Practical	2
USIT4P5	Core Subject Practical	Computer Graphics and Animation Practical	2
Total Credits			20



Handwritten mark

B. Sc. (Information Technology)		Semester – IV	
Course Name: Software Engineering		Course Code: USIT404	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Introduction: What is software engineering? Software Development Life Cycle, Requirements Analysis, Software Design, Coding, Testing, Maintenance etc.</p> <p>Software Requirements: Functional and Non-functional requirements, User Requirements, System Requirements, Interface Specification, Documentation of the software requirements.</p> <p>Software Processes: Process and Project, Component Software Processes.</p> <p>Software Development Process Models.</p> <ul style="list-style-type: none"> • Waterfall Model. • Prototyping. • Iterative Development. • Rational Unified Process. • The RAD Model • Time boxing Model. <p>Agile software development: Agile methods, Plan-driven and agile development, Extreme programming, Agile project management, Scaling agile methods.</p>	12
II	<p>Socio-technical system: Essential characteristics of socio technical systems, Emergent System Properties, Systems Engineering, Components of system such as organization, people and computers, Dealing Legacy Systems.</p> <p>Critical system: Types of critical system, A simple safety critical system, Dependability of a system, Availability and Reliability, Safety and Security of Software systems.</p> <p>Requirements Engineering Processes: Feasibility study, Requirements elicitation and analysis, Requirements Validations, Requirements Management.</p> <p>System Models: Models and its types, Context Models, Behavioural Models, Data Models, Object Models, Structured Methods.</p>	12
III	<p>Architectural Design: Architectural Design Decisions, System Organisation, Modular Decomposition Styles, Control Styles, Reference Architectures.</p>	12



	<p>User Interface Design: Need of UI design, Design issues, The UI design Process, User analysis, User Interface Prototyping, Interface Evaluation.</p> <p>Project Management Software Project Management, Management activities, Project Planning, Project Scheduling, Risk Management.</p> <p>Quality Management: Process and Product Quality, Quality assurance and Standards, Quality Planning, Quality Control, Software Measurement and Metrics.</p>	
IV	<p>Verification and Validation: Planning Verification and Validation, Software Inspections, Automated Static Analysis, Verification and Formal Methods. Software Testing: System Testing, Component Testing, Test Case Design, Test Automation.</p> <p>Software Measurement: Size-Oriented Metrics, Function-Oriented Metrics, Extended Function Point Metrics</p> <p>Software Cost Estimation: Software Productivity, Estimation Techniques, Algorithmic Cost Modelling, Project Duration and Staffing</p>	12
V	<p>Process Improvement: Process and product quality, Process Classification, Process Measurement, Process Analysis and Modeling, Process Change, The CMMI Process Improvement Framework.</p> <p>Service Oriented Software Engineering: Services as reusable components, Service Engineering, Software Development with Services.</p> <p>Software reuse: The reuse landscape, Application frameworks, Software product lines, COTS product reuse.</p> <p>Distributed software engineering: Distributed systems issues, Client-server computing, Architectural patterns for distributed systems, Software as a service</p>	12

Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	Software Engineering, edition,	Ian Somerville	Pearson Education.	Ninth	
2.	Software Engineering	Pankaj Jalote	Narosa Publication		
3.	Software engineering, a practitioner's approach	Roger Pressman	Tata Mcgraw-hill	Seventh	
4.	Software Engineering principles and practice	WS Jawadekar	Tata Mcgraw-hill		
5.	Software Engineering- A Concise Study	S.A Kelkar	PHI India.		



Academic Council 14/06/2018

Item No: 4.49

UNIVERSITY OF MUMBAI



Syllabus for T.Y.B.Sc.

Programme: B.Sc.

Subject: Information Technology

with effect from the academic year

2018 – 2019



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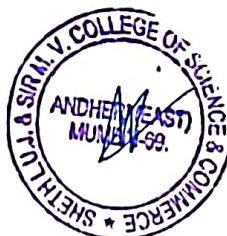
SEMESTER VI

Semester – 5			
Course Code	Course Type	Course Title	Credits
USIT501	Skill Enhancement Course	Software Project Management	2
USIT502	Skill Enhancement Course	Internet of Things	2
USIT503	Skill Enhancement Course	Advanced Web Programming	2
USIT504	Discipline Specific Elective (Any One)	Artificial Intelligence	2
USIT505		Linux System Administration	
USIT506	Discipline Specific Elective (Any One)	Enterprise Java	2
USIT507		Next Generation Technologies	
USIT5P1	Skill Enhancement Course Practical	Project Dissertation	2
USIT5P2	Skill Enhancement Course Practical	Internet of Things Practical	2
USIT5P3	Skill Enhancement Course Practical	Advanced Web Programming Practical	2
USIT5P4	Discipline Specific Elective Practical (Any One)*	Artificial Intelligence Practical	2
USIT5P5		Linux Administration Practical	
USIT5P6	Discipline Specific Elective Practical (Any One)*	Enterprise Java Practical	2
USIT5P7		Next Generation Technologies Practical	
Total Credits			20

(All the practical mentioned in the syllabi are compulsory as per the courses chosen)

Semester – 6			
Course Code	Course Type	Course Title	Credits
USIT601	Skill Enhancement Course	Software Quality Assurance	2
USIT602	Skill Enhancement Course	Security in Computing	2
USIT603	Skill Enhancement Course	Business Intelligence	2
USIT604	Discipline Specific Elective (Any One)	Principles of Geographic Information Systems	2
USIT605		Enterprise Networking	
USIT606	Discipline Specific Elective (Any One)	IT Service Management	2
USIT607		Cyber Laws	
USIT6P1	Skill Enhancement Course Practical	Project Implementation	2
USIT6P2	Skill Enhancement Course Practical	Security in Computing Practical	2
USIT6P3	Skill Enhancement Course Practical	Business Intelligence Practical	2
USIT6P4	Discipline Specific Elective Practical (Any One)*	Principles of Geographic Information Systems Practical	2
USIT6P5		Enterprise Networking Practical	
USIT6P6	Skill Enhancement Course Practical	Advanced Mobile Programming	2
Total Credits			20

*The choice of Practical course is based on the theory Course. For Semester V, USIT504, USIT505, USIT506 and USIT507, the practical courses are USIT5P4, USIT5P5, USIT5P6, USIT5P7. For Semester VI, USIT604, USIT605 the practical courses are USIT6P4, USIT6P5 respectively. Practical Course USIT6P6 is compulsory.



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B. Sc. (Information Technology)		Semester – VI	
Course Name: Security in Computing		Course Code: USIT602	
Periods per week (1 Period is 50 minutes)		5	
Credits		2	
		Hours	Marks
Evaluation System	Theory Examination	2½	75
	Internal	--	25

Unit	Details	Lectures
I	<p>Information Security Overview: The Importance of Information Protection, The Evolution of Information Security, Justifying Security Investment, Security Methodology, How to Build a Security Program, The Impossible Job, The Weakest Link, Strategy and Tactics, Business Processes vs. Technical Controls.</p> <p>Risk Analysis: Threat Definition, Types of Attacks, Risk Analysis.</p> <p>Secure Design Principles: The CIA Triad and Other Models, Defense Models, Zones of Trust, Best Practices for Network Defense.</p>	12
II	<p>Authentication and Authorization: Authentication, Authorization</p> <p>Encryption: A Brief History of Encryption, Symmetric-Key Cryptography, Public Key Cryptography, Public Key Infrastructure.</p> <p>Storage Security: Storage Security Evolution, Modern Storage Security, Risk Remediation, Best Practices.</p> <p>Database Security: General Database Security Concepts, Understanding Database Security Layers, Understanding Database-Level Security, Using Application Security, Database Backup and Recovery, Keeping Your Servers Up to Date, Database Auditing and Monitoring.</p>	12
III	<p>Secure Network Design: Introduction to Secure Network Design, Performance, Availability, Security.</p> <p>Network Device Security: Switch and Router Basics, Network Hardening.</p> <p>Firewalls: Overview, The Evolution of Firewalls, Core Firewall Functions, Additional Firewall Capabilities, Firewall Design.</p> <p>Wireless Network Security: Radio Frequency Security Basics, Data-Link Layer Wireless Security Features, Flaws, and Threats, Wireless Vulnerabilities and Mitigations, Wireless Network Hardening Practices and Recommendations, Wireless Intrusion Detection and Prevention, Wireless Network Positioning and Secure Gateways.</p>	12
IV	<p>Intrusion Detection and Prevention Systems: IDS Concepts, IDS Types and Detection Models, IDS Features, IDS Deployment Considerations, Security Information and Event Management (SIEM).</p> <p>Voice over IP (VoIP) and PBX Security: Background, VoIP Components, VoIP Vulnerabilities and Countermeasures, PBX, TEM: Telecom Expense Management.</p> <p>Operating System Security Models: Operating System Models, Classic Security Models, Reference Monitor, Trustworthy Computing, International Standards for Operating System Security.</p>	12



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V	Virtual Machines and Cloud Computing: Virtual Machines, Cloud Computing. Secure Application Design: Secure Development Lifecycle, Application Security Practices, Web Application Security, Client Application Security, Remote Administration Security. Physical Security: Classification of Assets, Physical Vulnerability Assessment, Choosing Site Location for Security, Securing Assets: Locks and Entry Controls, Physical Intrusion Detection.	12
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Books and References:					
Sr. No.	Title	Author/s	Publisher	Edition	Year
1.	The Complete Reference: Information Security	Mark Rhodes-Ousley	McGraw-Hill	2 nd	2013
2.	Essential Cybersecurity Science	Josiah Dykstra	O'Reilly	Fifth	2017
3.	Principles of Computer Security: CompTIA Security+ and Beyond	Wm.Arthur Conklin, Greg White	McGraw Hill	Second	2010



UNIVERSITY OF MUMBAI



Syllabus For the

Program: F.Y.B.Sc. Sem -I & II CBCS

Course: Computer Science

**(Choice Based and Credit System with effect from the
academic year 2021-22)**

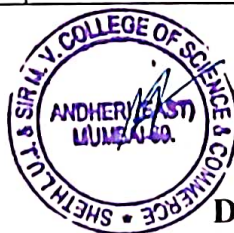


UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1.	Title of the Course	F.Y.B.Sc. Sem. I & II (Computer Science)
2.	Eligibility for Admission	Ordinance no. O.5719 Circular no. UG/284 of 2007 dated 16 th June 2007
3.	Passing Marks	40%
4.	Ordinances / Regulations (if, any)	As applicable for all B.Sc. Courses
5.	Number of years / Semesters	Three years – Six Semesters
6.	Level	P.G./ U.G. / Diploma / Certificate (Strike out which is not applicable)
7.	Pattern	Yearly / Semester, Choice Based (Strike out which is not applicable)
8.	Status	New / Revised
9.	To be implemented from Academic year	From the Academic Year 2021 – 2022

Date: 28/06/2021

Dr. Jagdish Bakal
BoS Chairperson in Computer Science



Dr. Anuradha Majumdar
Dean, Science and Technology

Academic year 2021-2022

Semester – I				
Course Code	Course Type	Course Title	Credits	Lectures/Week
USCS101	Core Subject	Digital Systems & Architecture	2	3
USCSP101	Core Subject Practical	Digital Systems & Architecture – Practical	1	3
USCS102	Core Subject	Introduction to Programming with Python	2	3
USCSP102	Core Subject Practical	Introduction to Programming with Python – Practical	1	3
USCS103	Core Subject	LINUX Operating System	2	3
USCSP103	Core Subject Practical	LINUX Operating System – Practical	1	3
USCS104	Core Subject	Open Source Technologies	2	3
USCSP104	Core Subject Practical	Open Source Technologies – Practical	1	3
USCS105	Core Subject	Discrete Mathematics	2	3
USCSP105	Core Subject Practical	Discrete Mathematics – Practical	1	3
USCS106	Core Subject	Descriptive Statistics	2	3
USCSP106	Core Subject Practical	Descriptive Statistics – Practical	1	3
USCS107	Ability Enhancement Course	Soft Skills	2	3



Course Code	Course Title	Credits	Lectures /Week
USCS107	Soft Skills	2	3

About the Course:

To help learners develop their soft skills and develop their personality along with technical skills. Focus on various communication enhancement along with academic and professional ethics.

Course Objectives:

- Understand the significance and essence of a wide range of soft skills.
- Learn how to apply soft skills in a wide range of routine social and professional settings
- Learn how to employ soft skills to improve interpersonal relationships
- Learn how to employ soft skills to enhance employability and ensure workplace and career success

Learning Outcomes:

- Learners will be able to understand the importance and types soft skills
- Learners will develop skills for Academic and Professional Presentations.
- Learners will able to understand Leadership Qualities and Ethics.
- Ability to understand the importance of stress management in their academic & professional life.

Unit	Topics	No of Lectures
I	<p>Introduction to Soft Skills Soft Skills: An Introduction – Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development.</p> <p>Personality Development: Knowing Yourself, Positive Thinking, Johari's Window, Physical Fitness</p> <p>Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence, Competencies of Emotional Intelligence, Skills to Develop Emotional Intelligence</p> <p>Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels</p> <p>Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette</p> <p>Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics</p>	15



II	<p>Basic Skills in Communication: Components of effective communication: Communication process and handling them, Composing effective messages, Non – Verbal Communication: its importance and nuances: Facial Expression, Posture, Gesture, Eye contact, appearance (dress code).</p> <p>Communication Skills: Spoken English, Phonetics, Accent, Intonation</p> <p>Employment Communication: Introduction, Resume, Curriculum Vitae, Scannable Resume, Developing an Impressive Resume, Formats of Resume, Job Application or Cover Letter</p> <p>Job Interviews: Introduction, Importance of Resume, Definition of Interview, Background Information, Types of Interviews, Preparatory Steps for Job Interviews, Interview Skill Tips, Changes in the Interview Process, FAQ During Interviews</p> <p>Group Discussion: Introduction, Ambience/Seating Arrangement for Group Discussion, Importance of Group Discussions, Difference between Group Discussion, Panel Discussion and Debate, Traits, Types of Group Discussions, topic based and Case based Group Discussion, Individual Traits</p>	15
III	<p>Academic and Professional Skills: Professional Presentation: Nature of Oral Presentation, planning a Presentation, Preparing the Presentation, Delivering the Presentation</p> <p>Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method.</p> <p>Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building</p> <p>Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams.</p> <p>Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts</p> <p>Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress</p>	15
<p>Textbooks:</p> <ol style="list-style-type: none"> 1. Managing Soft Skills for Personality Development – edited by B.N.Ghosh, McGraw Hill India, 2017. 2. Soft Skills: An Integrated Approach to Maximize Personality, Gajendra S. Chauhan, Sangeeta Sharma, Wiley India <p>Additional References:</p> <ol style="list-style-type: none"> 1. Personality Development and Soft Skills, Barun K. Mitra, Oxford Press 2. Business Communication, ShaliniKalia, Shailja Agrawal, Wiley India 3. Cornerstone: Developing Soft Skills, Sherfield, Pearson India 		



AC 10/11/2021

Item No. 6.3

UNIVERSITY OF MUMBAI



Revised Syllabus for Program-
F.Y.B.Sc. Biotechnology (USBT)
(Sem. I & II)

(Choice Based Credit System)

With effect from the academic year 2022-2023



AC _____

Item No. _____

UNIVERSITY OF MUMBAI**Syllabus for Approval**

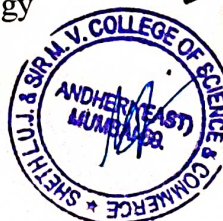
Sr. No.	Heading	Particulars
1	Title of the Course	F.Y.B.Sc. Biotechnology (USBT)
2	Eligibility for Admission	HSC (Science) with Physics, Chemistry, Mathematics and Biology. If the student has not opted for Mathematics in HSC, then he/she will have to complete 15 hours Bridge course in Mathematics
3	Passing Marks	40 %
4	Ordinances / Regulations (if any)	--
5	No. of Years / Semesters	03 Years/Six semesters
6	Level	Certificate/Diploma/UG/PG (Strike out which is not applicable)
7	Pattern	Semester/Yearly (Strike out which is not applicable)
8	Status	Revised/New (Strike out which is not applicable)
9	To be implemented from Academic Year	From Academic Year: 2022-2023

Signature :

Date:

Name: Dr. Anuradha Majumdar
Dean, Science and Technology

Dr. Archana Rath
Chairperson Ad-hoc BoS in Biotechnology



Preamble:

Twenty First Century is known as the Century of Biotechnology. Biotechnology is one of the youngest branches of Life Science, which has expanded and established as an advanced interdisciplinary applied science in last few years. Biotechnology at the core envisages the comprehensive study of Life and the Interdisciplinary potential of Biotechnology has led to a unique status for Biotechnology in Research and Industry.

The socio-economic potential of Biotechnology is well established which has almost become synonymous with modern development. Biotechnology has its applications in almost every field touching practically every human activity. The applied aspect of Biotechnology is now getting established with its applications in Industry, Agriculture, Health and Environment, Biotechnology is the lead science expanding exponentially.

Biotechnology demands a trained, skilled human resource to establish the Industry and Research sectors. The field is novel and still expanding which demands inputs in Infrastructure and Technology. The global and local focus is on developing new technological applications is fast growing. Biotechnology sector in Research and Industry is expanding which is set to augur the next major revolution in the world.

The demand for trained workforce in Biotechnology is ever growing in Fundamental Research and Industry Sector. Academic and Research Sectors also require interdisciplinary trained manpower to further the Biotechnology Revolution.

The need of the hour is to design appropriate syllabi which keeps pace with changing times and technology with emphasizes on applications while elucidating technology in depth. The present syllabi are revised anticipating the future needs of Biotechnology Sector with more emphasis on imparting hands-on skills. The main thrust is laid on making syllabus compatible with developments in Education, Research and Industrial sectors. The Theory and Practical course in new restructured course will lead to impart skill-set essentials to further Biotechnology Sector. The revised syllabus combines basic principles of Physical, Chemical and Biological sciences in light of advancements in technology. The curriculum aims to impart basic knowledge with emphasis on its applications to make the students industry ready.

Dr. Anuradha Majumdar (Dean, Science and Technology)

Dr. Shivram Garje (Associate Dean, Science)

Dr. Archana Rath (Chairperson, Ad Hoc BOS in Biotechnology)

Dr. Tara Menon (Member)

Dr. Deepali Karkhanis (Member)

Dr. Sneha Panvalkar (Member)

Dr. Seema Kokitkar (Member)

Dr. Jayaprada R. Chunduri (Member)

Dr. Bhupendra Pushkar (Member)

Dr. Rajesh C. Patil (Member)

Dr. Varsha K. Mane (Member)



F.Y.B.Sc. Biotechnology (USBT) Course Structure
Semester I

Course code	Course Type	Title	Credits	Nos of Lectures /week
USBT101	Core Subject	Fundamentals of biotechnology-I	2	3
USBT102	Core Subject	Microbiology-I	2	3
USBT103	Core Subject	Basic Chemistry-I	2	3
USBT104	Core Subject	Biochemistry: Concept of Biomolecules-I	2	3
USBT105	Core Subject	Genetics	2	3
USBT106	Core Subject	Molecular biology-I	2	3
USBT107	Ability enhancement course	Ability enhancement course - Communication skills	2	3
USBTP101	Core Subject practicals	Practicals of USBT101 & USBT102	2	3
USBTP102	Core Subject practicals	Practicals of USBT103 & USBT104	2	3
USBTP103	Core Subject practicals	Practicals of USBT105 & USBT106	2	3
	TOTAL		20	



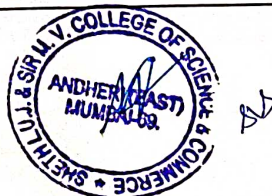
F.Y.B.Sc. Biotechnology (USBT) Course Structure
Semester II

Course code	Course Type	Title	Credits	Nos of Lectures /week
USBT101	Core Subject	Fundamentals of Biotechnology-II	2	3
USBT102	Core Subject	Cell biology and Microbiology-II	2	3
USBT103	Core Subject	Basic Chemistry-II	2	3
USBT104	Core Subject	Biochemistry: Concept of Biomolecules-II and Basic analytical techniques	2	3
USBT105	Core Subject	Physiology and Immunology	2	3
USBT106	Core Subject	Basic Computers and Biostatistics	2	3
USBT107	Ability enhancement course	Ability enhancement course - Sustainable development and Environmental biotechnology	2	3
USBTP101	Core Subject practicals	Practicals of USBT201 & USBT202	2	3
USBTP102	Core Subject practicals	Practicals of USBT203 & USBT204	2	3
USBTP103	Core Subject practicals	Practicals of USBT205 & USBT206	2	3
	TOTAL		20	

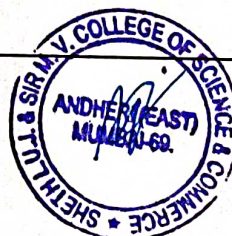


	DNA Replication in Eukaryotes Enzymes and proteins involved in DNA replication		
Unit III- Mutation and repair	Definition and concept of Mutations: Classification of mutations Types of Point Mutations, Types of Spontaneous and induced mutations Mutagenesis and types of Mutagens. (Examples of Physical, Chemical and Biological Mutagens) DNA repair: Photoreversal, Base Excision Repair, Nucleotide Excision Repair, Mismatch Repair, SOS Repair.		15
References	<ol style="list-style-type: none"> 1. Satyanarayana U. and Chakrapani U. (2007). Biochemistry. 3rd Edition. Books and Allied (P) Ltd. 2. Russell, P. J., & Gordey, K. (2002). IGenetics ,San Francisco: Benjamin Cummings. 3. Simmons, M. J., & Snustad, D. P. (2006). Principles of genetics. John Wiley & Sons. 4. Russell, P. J. (2000). Fundamentals of genetics. Longman Publishing Group. 5. Karp, G. (2009). Cell and molecular biology: concepts and experiments. John Wiley & Sons. 6. Strickberger M., Genetics. (1995). Australia: Deakin University 		

Course Code	Title	Credits	No of lectures
USBT107	Ability Enhancement Course-Communication skills	02	
<p>Course Objectives: To acquaint the students with different aspects of communication skills.</p> <p>Learning Outcomes: By the end of the course the student will:</p> <ul style="list-style-type: none"> • Develop an understanding of communication skills required to excel in real work environment and corporate life. • Gain insight into technical and non-technical qualities in career planning • Learn about Leadership, team building, decision making and stress management 			
Unit I- Academic skills	Essentials of Grammar: Parts of speech, Articles, Modals, Sentences and their types., Punctuation marks Employment Communication: Introduction, Resume, Curriculum Vitae, Scannable Resume, Developing an Impressive Resume, Formats of Resume, Job Application or Cover Letter. Email Writing Professional Presentation: Nature of Oral Presentation, planning a Presentation, Preparing the Presentation, Delivering the Presentation		15



	<p>Job Interviews: Introduction, Importance of Resume, Definition of Interview, Background Information, Types of Interviews, Preparatory Steps for Job Interviews, Interview Skill Tips, Changes in the Interview Process, FAQ During Interviews</p> <p>Group Discussion: Introduction, Ambience/Seating Arrangement for Group Discussion, Importance of Group Discussions, Difference between Group Discussion, Panel Discussion and Debate, Traits, Types of Group Discussions, topic based and Case based Group Discussion, Individual Traits</p>		
<p>Unit II- Soft skills</p>	<p>Introduction to Soft Skills and Hard Skills</p> <p>Personality Development: Knowing Yourself, Positive Thinking, Johari's Window, Communication Skills, Non-verbal Communication, Physical Fitness</p> <p>Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence, Competencies of Emotional Intelligence, Skills to Develop Emotional Intelligence</p> <p>Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette</p> <p>Communication Today: Significance of Communication, GSC's 3M Model of Communication, Vitality of the Communication Process, Virtues of Listening, Fundamentals of Good Listening, Nature of Non-Verbal Communication, Need for Intercultural Communication, Communicating Digital World</p>		15
<p>Unit III- Professional skills</p>	<p>Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method</p> <p>Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics</p> <p>Capacity Building: Need and Importance of Capacity Building Elements of Capacity Building Zones of Learning Ideas for Learning Strategies for Capacity Building</p> <p>Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams</p> <p>Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts</p> <p>Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress</p>		15
<p>References</p>	<ol style="list-style-type: none"> 1. Kumar, Sanjay, and Lata, Pushp. Communication Skills, Second Edition. India, Oxford University Press, 2015. 2. Chauhan, G. S., Sharma, S. (2016). Soft Skills: An Intergrated Approach to Maximise Personality. India: Wiley. 3. Mitra, B. K. (2011). Personality development and soft skills (Vol. 156). Oxford University Press. 		



Concept of Data, Sources of data, Types of data (Quantitative & Qualitative), Representation of Data and Graphs (Bar Diagrams, Pie Charts and Frequency distribution, Histogram, Polygon and Curve)

Sampling strategies:

Population and Sample, Significance of using samples, Sample size, Random variation, Sampling techniques (Simple random sampling, Systematic sampling, Stratified sampling, Cluster sampling, Multiphase sampling) and Non- probability sampling

Types of Statistics:

Introduction to Descriptive & Inferential statistics

Descriptive statistics:

Measures of central tendency:

Mean, Mode, Median (Ungrouped & Grouped data)

Measures of dispersion:

Range, Variance, Standard deviation (Ungrouped & Grouped data), Coefficient of variation

Measures of location:

Percentiles, Interquartile range (Box-Whisker plot)

Normal/Gaussian distribution, Standard normal deviate, Sampling variation, Standard error of mean

References

1. Sinha, P. K., Sinha, P. (2004). Computer Fundamentals. India: BPB Publications.
2. Goel, A. (2010). Computer Fundamentals. India: Pearson Education.
3. Wempen, F. (2014). Computing Fundamentals: Introduction to Computers. Germany: Wiley.
4. Tanenbaum, A. S., Wetherall, D. (2014). Computer Networks. United Kingdom: Pearson Education.
5. Khanal, A. B. (2015). Mahajan's Methods in Biostatistics For Medical Students and Research Workers. India: Jaypee Brothers, Medical Publishers Pvt. Limited.
6. Cross, C. L., Daniel, W. W. (2018). Biostatistics: A Foundation for Analysis in the Health Sciences. United Kingdom: Wiley.
7. Arora, P. N., Malhan, P. K. (2009). Biostatistics. India: Himalaya Publishing House.

Course Code	Title	Credits	No of lectures
USBT207	Ability Enhancement Course- Sustainable development and Environmental biotechnology	02	

Course Objectives:

To sensitize and create awareness about Ecology, renewable energy and different Environmental Issues.

Learning Outcomes:

By the end of the course the student will:

- Develop an understanding of the structure and functioning of the ecosystems.
- Gain insights about the concept of pollution, climate change and sustainable development



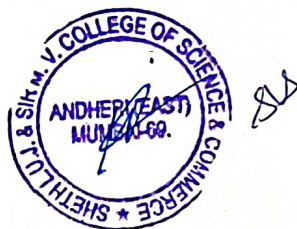
• Understand the relevance of renewable energy sources and conservation of biodiversity

<p>Unit I- Ecological interactions and Biodiversity</p>	<p>Concept of Ecosystems: Definition and Components- Structure and function of ecosystem aspects of ecosystems Food Chain and Food Web, Ecological Pyramids (Energy, Biomass and Number) Aquatic and Terrestrial Ecosystems, Different Abiotic Factors of ecosystem and adaptations to different abiotic factors Ecological Interactions: Commensalism, Mutualism, Predation and Antibiosis, Parasitism, competition Biodiversity and its conservation: Introduction – definition: genetic, species, ecosystem diversity, biogeographic classification of India, value of biodiversity, biodiversity at global, national and local levels, India as a mega diversity nation, Hotspots of biodiversity, threats to biodiversity, conservation of biodiversity</p>		<p>15</p>
<p>Unit II- Pollution and climate change</p>	<p>Environmental Pollution: Definition, Cause, effects and control measures of- Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, nuclear hazards. Role of an individual in prevention of pollution. Pollution case studies. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Sustainable development: Concept, basic principles of sustainable development, post-brundtland world, roots of sustainability, Indicators, paradigm towards new discipline-sustainability science.</p>		<p>15</p>
<p>Unit III- Renewable sources of energy</p>	<p>Introduction: Renewable and Non-renewable resources. The need for a sustainable lifestyle. Energy resources: Types of energy Nonrenewable energy - Oil, coal and its environmental impacts. Renewable energy: Hydroelectric power, Solar energy, Biomass energy, Biogas, Wind power and Geothermal energy. Biogas technology: Biogas plant & types, biodigester. Biogas- composition, production and factors affecting production and uses. Biofuels: Ethanol production, Microbial hydrogen production, Biodiesel, Petrocrops.</p>		<p>15</p>



References

1. Verma, V. (2010). Botany. India: Ane Books Pvt Ltd.
2. Bharucha, E. (2005). Textbook of Environmental Studies for Undergraduate Courses. India: Universities Press (India) Pvt. Limited.
3. Verma, P. S. (2004). Cell Biology, Genetics, Molecular Biology: Evolution and Ecology. India: S. Chand Limited.
4. Khoiyangbam, R. S. (2015). Introduction to Environmental Sciences. India: Energy and Resources Institute.
5. Fulekar, M. H. (2010). Environmental Biotechnology. United Kingdom: CRC Press.
6. Scragg, A. H. (2004). Environmental Biotechnology. United Kingdom: Oxford University Press.



University of Mumbai



No. AAMS_UGS/ICC/2023-24/29


CIRCULAR:-

Attention of the Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology is invited to this office Circular No. UG/212 of 2017-18 dated 22nd August, 2017 relating to the revised syllabus as per the (CBCS) for the S.Y.B. Sc. Biotechnology (Sem -III & IV).

They are hereby informed that the recommendations made by the Board of Deans at its meeting held on 27th June, 2023 vide item No. 6.5 (R) have been accepted by the Academic Council at its meeting held on 27th June, 2023 vide item No. 6.5 (R) and that in accordance therewith, the revised syllabus of **S.Y.B. Sc. (Biotechnology) (CBCS) (Sem - III & IV)** has been brought into force with effect from the academic year 2023-24.

(The said circular is available on the University's website www.mu.ac.in).

MUMBAI - 400 032
13th July, 2023


(Prof. Sunil Bhirud)
I/c. REGISTRAR

To

The Principals of the Affiliated Colleges and Directors of the Recognized Institutions in Faculty of Science & Technology.

A.C/6.5 (R) /27/06/2023

Copy forwarded with Compliments for information to:-

- 1) The Dean, Faculty of Science & Technology,
- 2) The Chairman, Board of Studies **Biotechnology**,
- 3) The Director, Board of Examinations and Evaluation,
- 4) The Director, Board of Students Development,
- 5) The Director, Department of Information & Communication Technology,
- 6) The Co-ordinator, MKCL.



DS

UNIVERSITY OF MUMBAI



**Revised Syllabus for
S.Y.B.Sc. (Biotechnology)
(Sem. III & IV)
(CBCS)**

(With effect from the academic year 2023-24)



SEMESTER- III

Course code	Course type	Course Title	Credits	Lectures/ Week
USBT301	Core Subject	Bioprocess technology	2	3
USBT302	Core Subject	Medical Microbiology	2	3
USBT303	Core Subject	Applied chemistry-1	2	3
USBT304	Core Subject	Fundamentals in Biophysics	2	3
USBT305	Core Subject	Immunology	2	3
USBT306	Core Subject	Molecular biology-III	2	3
USBT307	General Elective	Biosafety	2	3
USBTP301	Core Subject Practicals	Practicals of USBT_301 and USBT_302	2	6
USBTP302	Core Subject Practicals	Practicals of USBT_303 and USBT_304	2	6
USBTP303	Core Subject Practicals	Practicals of USBT_305 and USBT_306	2	6

SEMESTER-IV

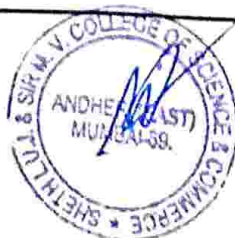
Course code	Course type	Course Title	Credits	Lectures/ Week
USBT401	Core Subject	Medical biotechnology	2	3
USBT402	Core Subject	Cell biology and cytogenetics	2	3
USBT403	Core Subject	Applied chemistry-2	2	3
USBT404	Core Subject	Biochemistry	2	3
USBT405	Core Subject	Molecular diagnostics	2	3
USBT406	Core Subject	Bioinformatics and Biostatistics	2	3
USBT407	General Elective	Research methodology	2	3
USBTP401	Core Subject	Practicals of USBT_401 and USBT_402	2	6



Course Code	Title	Credits	No. of Lectures
USBT307	BIOSAFETY	2	
<p>Objective: Learner should</p> <ul style="list-style-type: none"> • Understand the concept of GLPs. • Learn about routes of microbial contaminants and assays to detect contamination. <p>Learning Outcome: Learner will be able</p> <ul style="list-style-type: none"> • to document laboratory work, calibration records and prepare SOPs. • to identify the role of the Biosafety Professional in Biomedical Research Laboratories 			
UNIT I Introduction to biosafety, GLP	<p>Introduction: Biological Risk Assessment, Hazardous Characteristics of an Agent; Genetically modified agent hazards; Cell cultures; Hazardous Characteristics of Laboratory Procedures; Potential Hazards Associated with Work Practice.</p> <p>Concept of GLP; Practicing GLP; Guidelines to GLP; Documentation of Laboratory work; Preparation of SOPs; Calibration records; Validation of methods; Documentation of results; Audits & Audit reports.</p>		15
UNIT II Biosafety in diagnostics labs	<p>Biosafety</p> <p>Good diagnostic lab practice and procedures</p> <p>Personnel competence and training</p> <p>Facility design</p> <p>Specimen and material receipt and storage</p> <p>Decontamination and waste management</p> <p>Personal protective equipment</p> <p>Laboratory equipment</p> <p>Safe techniques</p> <p>Emergency/incident response</p> <p>Occupational health</p> <p>Transport</p> <p>Maintenance of records</p> <p>Reporting of accidents</p> <p>Training</p>		15
UNIT III Detection and testing of contaminants	<p>Microbial Contamination in food and pharma products; Some common microbial contaminants; Microbiological Assays for pharmaceutical products; Regulatory Microbiological testing in pharmaceuticals.</p>		15



Course Code	Title	Credits	No. of Lectures
USBT407	RESEARCH METHODOLOGY	2	
<p>Course objectives:- The objective of this course is to develop research aptitude, logical thinking and reasoning.</p> <p>Learning outcomes:- By the end of the course the student will be able to:</p> <ul style="list-style-type: none"> • understand basic principles of research methodology and identify a research problem. • understand a general definition of research design. • identify the overall process of designing a research study from its inception to its report. 			
UNIT I Introduction to Research Methodology and Research Problem	Meaning of Research; Objectives of Research; Motivation in Research; Types of Research; Research Approaches; Significance of Research; Research Methods versus Methodology; Research Process; Criteria of Good Research; Problems Encountered by Researchers in India; What is a Research Problem? Selecting the Problem; Necessity of Defining the Problem; Technique Involved in Defining a Problem		15
UNIT II Research Design, Data Collection and processing	Meaning of Research Design; Need for Research Design; Features of a Good Design; Important Concepts Relating to Research Design; Different Research Designs; Basic Principles of Experimental Designs; Developing a Research Plan Collection of Primary Data; Observation Method; Interview Method; Collection of Data through Questionnaires; Collection of Data through Schedules; Other Methods of Data Collection, Collection of Secondary Data, Selection of Appropriate Method for Data Collection, Case Study Method		15
UNIT III Interpretation and Report Writing	Meaning of Interpretation, Why Interpretation?, Technique of Interpretation, Precautions in Interpretation, Significance of Report Writing, Different Steps in Writing Report, Layout of the Research Report, Types of Reports, Oral Presentation, Mechanics of Writing a Research Report, Precautions for Writing Research Reports.		15



04

UNIVERSITY OF MUMBAI



Revised Syllabus for T.Y.B.Sc.
Programme- B.Sc.
Course- Biotechnology (USBT)
(Third Year – Sem. V & VI)

(Credit Based Semester and Grading System with effect from
the academic year 2018-2019)



TYBSC Biotechnology Course Structure

Semester V

Course code USBT	Title	Theory /Practical	Marks	Credits	Nos of Lectures & Practical
501	Cell biology	Theory	100	2.5	60
502	Medical Microbiology & Instrumentation	Theory	100	2.5	60
503	Genomes and Molecular Biology	Theory	100	2.5	60
504	Marine Biotechnology	Theory	100	2.5	60
P501+502	Cell biology+ Medical Microbiology & Instrumentation	Practical	100	3.0	72
P503+504	Genomes and Molecular Biology+ Marine Biotechnology	Practical	100	3.0	72
Applied Component	Biosafety	Theory	100	2.0	48
	Biosafety	Practical	100	2.0	48
	TOTAL		800	20	480



Course	Title	Unit	Topics	Credits	Lectures
Applied component	Biosafety	I: Introduction to biosafety	Introduction - 1 lecture Biological Risk Assessment, Hazardous Characteristics of an Agent- 2 lectures; Genetically modified agent hazards - 1 lecture; Cell cultures - 1 lecture; Hazardous Characteristics of Laboratory Procedures - 1 lecture; Potential Hazards Associated with Work Practices - 2 lectures; Safety Equipment and Facility Safeguards - 2 lectures; Pathogenic risk and management - 2 lectures	2.0	15
		II: GLP	Concept of GLP- 1 lectures; Practicing GLP- 1 lecture; Guidelines to GLP - 2 lectures; Documentation of Laboratory work - 1 lectures; Preparation of SOPs - 2 lectures; Calibration records - 1 lectures; Validation of methods - 1 lectures; Documentation of results - 1 lecture; Audits & Audit reports - 1 lecture.		12
		III: Detection and testing of contaminants	Microbial Contamination in food and pharma product - 3 lectures; Some common microbial contaminants - 3 lectures; Microbiological Assays for pharmaceutical products - 4 lectures; Regulatory Microbiological testing in pharmaceuticals - 3 lectures.		12
		IV: Biosafety in Biotechnology	Concepts on biosafety in Biotechnology - 2 lectures; Regulating rDNA technology - 2 lectures; Regulating food and food ingredients - 3 lectures; Genetically engineered crops, livestock Bioethics - 3 lectures; Contemporary issues in Bioethics - 2 lectures.		12
		Total			48



UNIVERSITY OF MUMBAI



Syllabus

For the

Program: F.Y.B.Sc. Sem -I & II CBCS

Course: Computer Science

**(Choice Based and Credit System with effect from the
academic year 2021-22)**

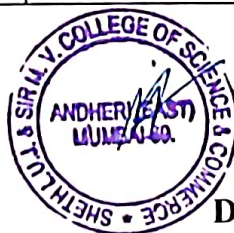


UNIVERSITY OF MUMBAI**Syllabus for Approval**

Sr. No.	Heading	Particulars
1.	Title of the Course	F.Y.B.Sc. Sem. I & II (Computer Science)
2.	Eligibility for Admission	Ordinance no. O.5719 Circular no. UG/284 of 2007 dated 16 th June 2007
3.	Passing Marks	40%
4.	Ordinances / Regulations (if, any)	As applicable for all B.Sc. Courses
5.	Number of years / Semesters	Three years – Six Semesters
6.	Level	P.G./ U.G. / Diploma / Certificate (Strike out which is not applicable)
7.	Pattern	Yearly / Semester, Choice Based (Strike out which is not applicable)
8.	Status	New / Revised
9.	To be implemented from Academic year	From the Academic Year 2021 – 2022

Date: 28/06/2021

Dr. Jagdish Bakal
BoS Chairperson in Computer Science



Dr. Anuradha Majumdar
Dean, Science and Technology

Academic year 2021-2022

Semester – I				
Course Code	Course Type	Course Title	Credits	Lectures/Week
USCS101	Core Subject	Digital Systems & Architecture	2	3
USCSP101	Core Subject Practical	Digital Systems & Architecture – Practical	1	3
USCS102	Core Subject	Introduction to Programming with Python	2	3
USCSP102	Core Subject Practical	Introduction to Programming with Python – Practical	1	3
USCS103	Core Subject	LINUX Operating System	2	3
USCSP103	Core Subject Practical	LINUX Operating System – Practical	1	3
USCS104	Core Subject	Open Source Technologies	2	3
USCSP104	Core Subject Practical	Open Source Technologies – Practical	1	3
USCS105	Core Subject	Discrete Mathematics	2	3
USCSP105	Core Subject Practical	Discrete Mathematics – Practical	1	3
USCS106	Core Subject	Descriptive Statistics	2	3
USCSP106	Core Subject Practical	Descriptive Statistics – Practical	1	3
USCS107	Ability Enhancement Course	Soft Skills	2	3



Course Code	Course Title	Credits	Lectures /Week
USCS107	Soft Skills	2	3

About the Course:

To help learners develop their soft skills and develop their personality along with technical skills. Focus on various communication enhancement along with academic and professional ethics.

Course Objectives:

- Understand the significance and essence of a wide range of soft skills.
- Learn how to apply soft skills in a wide range of routine social and professional settings
- Learn how to employ soft skills to improve interpersonal relationships
- Learn how to employ soft skills to enhance employability and ensure workplace and career success

Learning Outcomes:

- Learners will be able to understand the importance and types soft skills
- Learners will develop skills for Academic and Professional Presentations.
- Learners will able to understand Leadership Qualities and Ethics.
- Ability to understand the importance of stress management in their academic & professional life.

Unit	Topics	No of Lectures
I	<p>Introduction to Soft Skills Soft Skills: An Introduction – Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development.</p> <p>Personality Development: Knowing Yourself, Positive Thinking, Johari's Window, Physical Fitness</p> <p>Emotional Intelligence: Meaning and Definition, Need for Emotional Intelligence, Intelligence Quotient versus Emotional Intelligence Quotient, Components of Emotional Intelligence, Competencies of Emotional Intelligence, Skills to Develop Emotional Intelligence</p> <p>Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels</p> <p>Etiquette and Mannerism: Introduction, Professional Etiquette, Technology Etiquette</p> <p>Ethical Values: Ethics and Society, Theories of Ethics, Correlation between Values and Behavior, Nurturing Ethics, Importance of Work Ethics, Problems in the Absence of Work Ethics</p>	15



II	<p>Basic Skills in Communication: Components of effective communication: Communication process and handling them, Composing effective messages, Non – Verbal Communication: its importance and nuances: Facial Expression, Posture, Gesture, Eye contact, appearance (dress code).</p> <p>Communication Skills: Spoken English, Phonetics, Accent, Intonation</p> <p>Employment Communication: Introduction, Resume, Curriculum Vitae, Scannable Resume, Developing an Impressive Resume, Formats of Resume, Job Application or Cover Letter</p> <p>Job Interviews: Introduction, Importance of Resume, Definition of Interview, Background Information, Types of Interviews, Preparatory Steps for Job Interviews, Interview Skill Tips, Changes in the Interview Process, FAQ During Interviews</p> <p>Group Discussion: Introduction, Ambience/Seating Arrangement for Group Discussion, Importance of Group Discussions, Difference between Group Discussion, Panel Discussion and Debate, Traits, Types of Group Discussions, topic based and Case based Group Discussion, Individual Traits</p>	15
III	<p>Academic and Professional Skills: Professional Presentation: Nature of Oral Presentation, planning a Presentation, Preparing the Presentation, Delivering the Presentation</p> <p>Creativity at Workplace: Introduction, Current Workplaces, Creativity, Motivation, Nurturing Hobbies at Work, The Six Thinking Hat Method.</p> <p>Capacity Building: Learn, Unlearn and Relearn: Capacity Building, Elements of Capacity Building, Zones of Learning, Ideas for Learning, Strategies for Capacity Building</p> <p>Leadership and Team Building: Leader and Leadership, Leadership Traits, Culture and Leadership, Leadership Styles and Trends, Team Building, Types of Teams.</p> <p>Decision Making and Negotiation: Introduction to Decision Making, Steps for Decision Making, Decision Making Techniques, Negotiation Fundamentals, Negotiation Styles, Major Negotiation Concepts</p> <p>Stress and Time Management: Stress, Sources of Stress, Ways to Cope with Stress</p>	15
<p>Textbooks:</p> <ol style="list-style-type: none"> 1. Managing Soft Skills for Personality Development – edited by B.N.Ghosh, McGraw Hill India, 2017. 2. Soft Skills: An Integrated Approach to Maximize Personality, Gajendra S. Chauhan, Sangeeta Sharma, Wiley India <p>Additional References:</p> <ol style="list-style-type: none"> 1. Personality Development and Soft Skills, Barun K. Mitra, Oxford Press 2. Business Communication, ShaliniKalia, Shailja Agrawal, Wiley India 3. Cornerstone: Developing Soft Skills, Sherfield, Pearson India 		



University of Mumbai



Revised Syllabus for

S.Y. B.Sc. (Computer Science)

Semester – III & IV

(Choice Based Credit System)

(With effect from the academic year 2022-23)




University of Mumbai

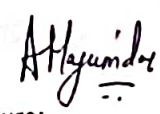


Syllabus for Approval

O: _____ Title of Course	S.Y.B.Sc. (Computer Science)
O: _____ Eligibility	As per University Regulations
Passing Marks	40%
Ordinances / Regulations (if, any)	
No. of years/Semesters:	Three years – Six Semesters
Level:	P.G. / U.G./Diploma / Certificate
Pattern:	Yearly / Semester
Status:	New / Revised
To be implemented from Academic Year :	From the Academic Year 2022 – 2023

Date:

Signature: 
Name: DR. JAGDISH W. BAKAL
Chairman of Ad-hoc/BoS of
Computer Science

Signature: 
Dr. Anuradha Majumdar
Dean, Science and Technology



S.Y.B.Sc. Computer Science Syllabus

Choice Based Credit System (CBCS)

with effect from

Academic year 2022-2023

Semester – IV				
Course Code	Course Type	Course Title	Credits	Lectures/Week
USCS401	Core Subject	Theory of Computation	2	3
USCSP401	Core Subject Practical	Theory of Computation – Practical	1	3
USCS402	Core Subject	Computer Networks	2	3
USCSP402	Core Subject Practical	Computer Networks – Practical	1	3
USCS403	Core Subject	Software Engineering	2	3
USCSP403	Core Subject Practical	Software Engineering – Practical	1	3
USCS404	Core Subject	IoT Technologies	2	3
USCSP404	Core Subject Practical	IoT Technologies – Practical	1	3
USCS405	Skill Enhancement Course (SEC)	Android Application Development	2	3
USCSP405	Skill Enhancement Course (SEC) Practical	Android Application Development – Practical	1	3
USCS406	Skill Enhancement Course (SEC)	Advanced Application Development	2	3
USCSP406	Skill Enhancement Course (SEC) Practical	Advanced Application Development – Practical	1	3
USCS4071	Generic Elective*	Research Methodology	2	3
USCS4072	Generic Elective*	Management & Entrepreneurship	2	3

* Any one Generic Elective has to be selected by the student.



Course Code	Course Title	Credits	Lectures /Week
USCS403	Software Engineering	2	3

About the Course:

This course covers a collection of methods which embody an "engineering" approach to the development of software. It discusses the nature of software and software projects, software development models, software process maturity, project planning, management, and estimations. It also underlines the topics on software testing and quality assurance.

Course Objectives:

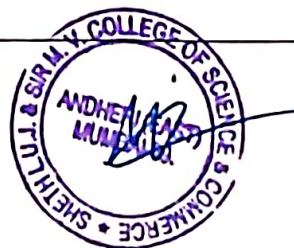
- To learn and understand the Concepts of Software Engineering
- To learn and understand Software Development Life Cycle
- To apply the project management and analysis principles to software project development.
- To apply the design & testing principles to software project development.

Learning Outcomes:

After successful completion of this course, students would be able to

- Plan a software engineering process life cycle, including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements
- Analyze and translate a specification into a design, and then realize that design practically, using an appropriate software engineering methodology.
- Know how to develop the code from the design and effectively apply relevant standards and perform testing, and quality management and practice
- Able to use modern engineering tools necessary for software project management, time management and software reuse.

Unit	Topics	No of Lectures
I	<p>Introduction: The Nature of Software, Software Engineering, Professional Software Development, Layered Technology, Process framework, CMM, Process Patterns and Assessment Prescriptive Models: Waterfall Model, Incremental, RAD Models Evolutionary Process Models: Prototyping, Spiral and Concurrent Development Model Specialized Models: Component based, Aspect Oriented development, The Unified Process Phases, Agile Development- Agility, Agile Process, Extreme Programming</p> <p>Requirement Analysis and System Modeling: Requirements Engineering, Eliciting Requirements, SRS Validation, Components of SRS, Characteristics of SRS, Object-oriented design using the UML - Class diagram, Object diagram, Use case diagram, Sequence diagram, Collaboration diagram, State chart diagram, Activity diagram, Component diagram, Deployment diagram</p>	15



<p style="text-align: center;">II</p>	<p>System Design: System/Software Design, Architectural Design, Low-Level Design Coupling and Cohesion, Functional-Oriented Versus Object-Oriented Approach, Design Specifications, Verification for Design, Monitoring and Control for Design</p> <p>Software Measurement and Metrics: Process Metrics and Project Metrics, Software Measurement, Object Oriented Metrics, Software Project Estimation, Decomposition Techniques, LOC based, FP based and Use case based estimations, Empirical estimation Models</p> <p>Software Project Management: Estimation in Project Planning Process –Software Scope and Feasibility, Resource Estimation, Empirical Estimation Models – COCOMO II, Estimation for Agile Development, The Make/Buy Decision</p> <p>Project Scheduling - Basic Principles, Relationship Between People and Effort, Effort Distribution, Time-Line Charts</p>	<p style="text-align: center;">15</p>
<p style="text-align: center;">III</p>	<p>Risk Management-Risk strategies, Software risks, Risk Identification, projection, RMMM Quality Concepts</p> <p>Software Quality Assurance SQA activities, Software reviews, FTR, Software reliability and measures, SQA plan Software Configuration Management, elements of SCM, SCM Process, Change Control Capability Maturity Model</p> <p>Software Testing :Verification and Validation, Introduction to Testing, Testing Principles, Testing Objectives, Test Oracles, Levels of Testing, White-Box Testing/Structural Testing, Functional/Black-Box Testing, Test Plan, Test-Case Design</p>	<p style="text-align: center;">15</p>
<p>Textbooks:</p> <ol style="list-style-type: none"> 1. Software Engineering, A Practitioner’s Approach, Roger S, Pressman, 2019 2. Software Engineering: principles and Practices, Deepak Jain, OXFORD University Press, 2008 <p>Additional References:</p> <ol style="list-style-type: none"> 1. Software Engineering, Ian Sommerville, Pearson Education, 2017 2. Fundamentals of Software Engineering, Fourth Edition, Rajib Mall, PHI, 2018 3. Software Engineering: Principles and Practices, Hans Van Vliet, John Wiley & Sons, 2010 4. A Concise Introduction to Software Engineering, Pankaj Jalote, Springer 		



AC – 27/06/2023

Item No. 6.2 (R)

UNIVERSITY OF MUMBAI



Revised Syllabus for

T.Y.B.Sc. (Computer Science)

(Sem. V & VI)

(CBCS)

(With effect from the academic year **2023-24**)



University of Mumbai



Syllabus for Approval

Sr. No.	Heading	Particulars
1	O: _____ Title of Course	T.Y.B.Sc. (Computer Science)
2	O: _____ Eligibility	Amended Regulations 8438 & 8439 for all UG programs (aided and non-aided) in Faculties of Arts, Science & Commerce
3	R: _____ Passing Marks	40% Marks
4	No. of years/Semesters:	3 Years/ 6 Semesters
5	Level:	P.G. / U.G. / Diploma / Certificate (Strike out which is not applicable)
6	Pattern:	Yearly / Semester (Strike out which is not applicable)
7	Status:	Revised / New (Strike out which is not applicable)
8	To be implemented from Academic Year :	From Academic Year: 2023-24

Garje

Prof. Shivram S. Garje,
Dean,
Faculty of Science and Technology



Preamble

The revised and restructured syllabus aims to provide students with a comprehensive understanding of computer science concepts, theories, and practical skills, enabling them to excel in the dynamic and rapidly evolving field of technology. The revised and restructured curriculum for the Three-year integrated course is systematically designed considering the current industry needs in terms of skill sets demanded in the new technological environment. It also endeavors to align the program structure and course curriculum with student aspirations and corporate expectations. The proposed curriculum is contextual, industry-friendly, and suitable to cater to the needs of society and the nation in the present-day environment.

The TYBSc Computer Science syllabus is structured as follows:

Core Modules: The syllabus comprises core modules that cover essential topics in computer science, ensuring a strong foundation that aim to develop computational thinking, analytical abilities, and problem-solving skills among students. The Artificial Intelligence course provides in-depth knowledge of cutting edge AI concepts and techniques empowering them to develop intelligent systems and algorithms. With a focus on safeguarding information and systems the Cyber and Information Security course equips students with essential concepts and practices in cybersecurity. The Data Science course provides students with a solid foundation in data analysis and interpretation, enabling them to extract valuable insights and make data-driven decisions. In an era dominated by cloud-based technologies, the Cloud Computing course focuses on the principles, architectures, and applications of cloud computing.

Skill Enhancement Electives: Students are required to choose skill enhancement electives to deepen their knowledge in specific areas of interest. The electives offer specialized courses such as web development, cybersecurity, data science, or software engineering. By selecting these courses, students can tailor their learning experience according to their career aspirations and industry demands. Skill Enhancement courses such as Linux Server Administration, Software Testing and Quality Assurance, Cyber Forensics, Game Programming, Data Mining and Warehousing, Wireless and Sensor Networks, Ethical Hacking, and Information Retrieval cater to specialized areas of expertise and industry demands.

Generic Electives: The syllabus also includes generic electives, which provide students with the option to explore disciplines of interest beyond their choices in Core and Discipline-Specific Elective papers. These courses broaden their horizons and allow for interdisciplinary learning.

Project Work: A significant component of the syllabus involves hands-on project work. Through practical assignments and projects, students have the opportunity to apply their theoretical knowledge to real-world scenarios. This approach fosters creativity, problem-solving skills, and innovation in designing and developing software solutions.

Assessment methods for the TY Computer Science syllabus include written examinations, practical assignments, project evaluations, and presentations. This comprehensive approach ensures that students' understanding is evaluated through various mediums, emphasizing both theoretical knowledge and practical skills.

The newly designed TY Computer Science syllabus aims to equip students with the necessary competencies to pursue careers in software development, data analysis, research, or further studies in computer science-related disciplines. It seeks to empower students with the knowledge and skills required to thrive in the ever-evolving landscape of technology and contribute to the advancement of the field.

We sincerely believe that students who undertake this program will gain a strong foundation and exposure to the basics, advanced concepts, and emerging trends in the subject. We express our gratitude to all the experts who provided valuable feedback and suggestions to improve the curriculum. We have made sincere efforts to incorporate their inputs. Special appreciation goes to the University Department



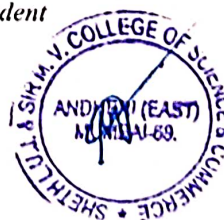
T.Y.B.Sc. Computer Science Syllabus
Choice Based Credit System (CBCS)
with effect from

Academic year 2023-2024

Semester – V				
Course Code	Course Type	Course Title	Credits	Lectures/Week
USCS501	Core Subject	Artificial Intelligence	3	3
USCSP501	Core Subject Practical	Artificial Intelligence – Practical	1	3
USCS502	Core Subject	Information & Network Security	3	3
USCSP502	Core Subject Practical	Information & Network Security – Practical	1	3
USCS5031	Skill Enhancement Elective 1* (SEE)	Linux Server Administration	3	3
USCSP5031	Skill Enhancement Elective 1* Practical (SEEP)	Linux Server Administration – Practical	1	3
USCS5032	Skill Enhancement Elective 1* (SEE)	Software Testing & Quality Assurance	3	3
USCSP5032	Skill Enhancement Elective 1* Practical (SEEP)	Software Testing & Quality Assurance – Practical	1	3
USCS5041	Skill Enhancement Elective 2* (SEE)	Cyber Forensics	3	3
USCSP5041	Skill Enhancement Elective 2* Practical (SEEP)	Cyber Forensics – Practical	1	3
USCS5042	Skill Enhancement Elective 2* (SEE)	Game Programming	3	3
USCSP5042	Skill Enhancement Elective 2* Practical (SEEP)	Game Programming – Practical	1	3
USCS5051	Generic Elective**	Project Management	2	3
USCS5052	Generic Elective**	Operations Research	2	3
USCSP505	Project	Project Work – I	2	3

* One course each from Skill Enhancement Elective 1 and Skill Enhancement Elective 2 should be selected by the student.

** One course from Generic Elective should be selected by the student



T.Y.B.Sc. Computer Science Syllabus
Choice Based Credit System (CBCS)
with effect from

Academic year 2023-2024

Semester – VI				
Course Code	Course Type	Course Title	Credits	Lectures/Week
USCS601	Core Subject	Data Science	3	3
USCSP601	Core Subject Practical	Data Science – Practical	1	3
USCS602	Core Subject	Cloud Computing and Web Services	3	3
USCSP602	Core Subject Practical	Cloud Computing and Web Services – Practical	1	3
USCS6031	Skill Enhancement Elective 1* (SEE)	Wireless and Sensor Networks	3	3
USCSP6031	Skill Enhancement Elective 1* Practical (SEEP)	Wireless and Sensor Networks – Practical	1	3
USCS6032	Skill Enhancement Elective 1* (SEE)	Information Retrieval	3	3
USCSP6032	Skill Enhancement Elective 1* Practical (SEEP)	Information Retrieval – Practical	1	3
USCS6041	Skill Enhancement Elective 2* (SEE)	Data Mining & Warehousing	3	3
USCSP6041	Skill Enhancement Elective 2* Practical (SEEP)	Data Mining & Warehousing – Practical	1	3
USCS6042	Skill Enhancement Elective 2* (SEE)	Ethical Hacking	3	3
USCSP6042	Skill Enhancement Elective 2* Practical (SEEP)	Ethical Hacking – Practical	1	3
USCS6051	Generic Elective**	Customer Relationship Management	2	3
USCS6052	Generic Elective**	Cyber Laws and IPR	2	3
USCSP605	Project	Project Work – II	2	3

* One course each from Skill Enhancement Elective 1 and Skill Enhancement Elective 2 should be selected by the student.

** One course from Generic Elective should be selected by the student



Course Code	Course Title	Credits	Lectures /Week
USCS6042	Ethical Hacking	2	3

About the Course: This course provides an in-depth exploration of ethical hacking and penetration testing methodologies. Students will learn about hacking technology types, the phases of ethical hacking, footprinting, social engineering, system hacking, web server and application vulnerabilities, wireless hacking, and more. The course emphasizes hands-on lab exercises and real-world scenarios to develop practical skills in identifying and mitigating security vulnerabilities.

Course Objectives:

- Understand the terminology and concepts related to ethical hacking and penetration testing.
- Explore various hacking technologies and the skills required to become an ethical hacker.
- Learn the different phases involved in ethical hacking and the methodologies used in penetration testing.
- Gain knowledge of common hacking techniques, such as footprinting, scanning, enumeration, and session hijacking.
- Develop proficiency in identifying and exploiting vulnerabilities in web servers, web applications, and wireless networks.

Learning Outcomes:

After successful completion of this course, students would be able to

- Apply ethical hacking methodologies to conduct comprehensive security assessments and penetration tests.
- Perform effective footprinting and reconnaissance techniques to gather critical information about target systems.
- Identify and exploit vulnerabilities in various network and system components using appropriate tools and techniques.
- Evaluate the security posture of web servers, web applications, and wireless networks, and recommend appropriate countermeasures.
- Demonstrate an understanding of ethical and legal considerations in conducting ethical hacking activities and adhere to professional codes of conduct.

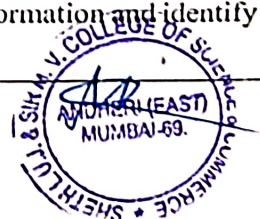
Unit	Topics	No of Lectures
I	<p>Introduction: Terminology, Hacking Technology Types, Ethical Hacking Phases, Hactivism, Hacker Classes, Skills Required for an Ethical Hacker, Vulnerability Research, Ways to Conduct Ethical Hacking</p> <p>Footprinting: Definition, Information Gathering Methodology, Competitive Intelligence, DNS Enumeration, Whois and ARIN Lookups, Types of DNS Records, Traceroute in Footprinting, E-Mail Tracking</p> <p>Social Engineering: Common Types Of Attacks</p> <p>Scanning and Enumeration: Port Scanning, Network Scanning, Vulnerability Scanning, CEH Scanning Methodology, Ping Sweep Techniques, Nmap Command Switches, SYN, Stealth, XMAS, NULL,</p>	15



	IDLE, FIN Scans, Anonymizers, HTTP Tunneling Techniques, IP Spoofing Techniques, SNMP Enumeration, Steps Involved in Enumeration	
II	<p>System Hacking: Password-Cracking Techniques, Types of Passwords, Keyloggers and Other Spyware Technologies, Escalating Privileges, Rootkits</p> <p>Sniffers: Protocols Susceptible to Sniffing, Active and Passive Sniffing, ARP Poisoning, MAC Flooding, DNS Spoofing Techniques, Sniffing Countermeasures</p> <p>Denial of Service: Types of DoS Attacks, Working of DoS Attacks, BOTs/BOTNETs, "Smurf" Attack, "SYN" Flooding, DoS/DDoS Countermeasures</p> <p>Session Hijacking: Spoofing vs. Hijacking, Types, Sequence Prediction, Steps, Prevention</p> <p>Hacking Web Servers: Web Server Vulnerabilities, Attacks against Web Servers, Patch Management Techniques, Web Server Hardening</p>	15
III	<p>Web Application Vulnerabilities: Web Application Hacking, Web Application Threats, Google Hacking, Countermeasures</p> <p>Web-Based Password Cracking Techniques: Authentication Types, Password Crackers, Countermeasures</p> <p>SQL Injection: Steps, SQL Server Vulnerabilities, Countermeasures</p> <p>Buffer Overflows: Types, Stack-Based Buffer Overflows, Mutation Techniques</p> <p>Wireless Hacking: WEP, WPA Authentication Mechanisms, and Cracking Techniques, Wireless Sniffers, Rogue Access Points, Wireless Hacking Techniques, Securing Wireless Networks</p> <p>Penetration Testing Methodologies: Methodologies, Steps, Automated Tools, Pen-Test Deliverables</p>	15
<p>Textbook(s):</p> <ol style="list-style-type: none"> 1. CEH official Certified Ethical Hacking Review Guide, Wiley India Edition <p>Additional Reference(s):</p> <ol style="list-style-type: none"> 1. Certified Ethical Hacker: Michael Gregg, Pearson Education 2. Certified Ethical Hacker: Matt Walker, TMH. 		



Course Code	Course Title	Credits	Lectures /Week
USCSP6042	Ethical Hacking - Practical	1	3
1	<p>Google and Whois Reconnaissance</p> <ul style="list-style-type: none"> • Use Google search techniques to gather information about a specific target or organization. • Utilize advanced search operators to refine search results and access hidden information. • Perform Whois lookups to retrieve domain registration information and gather details about the target's infrastructure. 		
2	<p>Password Encryption and Cracking with CrypTool and Cain and Abel</p> <ul style="list-style-type: none"> • Password Encryption and Decryption: <ul style="list-style-type: none"> ○ Use CrypTool to encrypt passwords using the RC4 algorithm. ○ Decrypt the encrypted passwords and verify the original values. • Password Cracking and Wireless Network Password Decoding: <ul style="list-style-type: none"> ○ Use Cain and Abel to perform a dictionary attack on Windows account passwords. ○ Decode wireless network passwords using Cain and Abel's capabilities. 		
3	<p>Linux Network Analysis and ARP Poisoning</p> <ul style="list-style-type: none"> • Linux Network Analysis: <ul style="list-style-type: none"> ○ Execute the ifconfig command to retrieve network interface information. ○ Use the ping command to test network connectivity and analyze the output. ○ Analyze the netstat command output to view active network connections. ○ Perform a traceroute to trace the route packets take to reach a target host. • ARP Poisoning: <ul style="list-style-type: none"> ○ Use ARP poisoning techniques to redirect network traffic on a Windows system. ○ Analyze the effects of ARP poisoning on network communication and security. 		
4	<p>Port Scanning with NMap</p> <ul style="list-style-type: none"> • Use NMap to perform an ACK scan to determine if a port is filtered, unfiltered, or open. • Perform SYN, FIN, NULL, and XMAS scans to identify open ports and their characteristics. • Analyze the scan results to gather information about the target system's network services. 		
5	<p>Network Traffic Capture and DoS Attack with Wireshark and Nemesy</p> <ul style="list-style-type: none"> • Network Traffic Capture: <ul style="list-style-type: none"> ○ Use Wireshark to capture network traffic on a specific network interface. ○ Analyze the captured packets to extract relevant information and identify potential security issues. 		



	<ul style="list-style-type: none"> Denial of Service (DoS) Attack: <ul style="list-style-type: none"> Use Nemesy to launch a DoS attack against a target system or network. Observe the impact of the attack on the target's availability and performance.
6	<p>Persistent Cross-Site Scripting Attack</p> <ul style="list-style-type: none"> Set up a vulnerable web application that is susceptible to persistent XSS attacks. Craft a malicious script to exploit the XSS vulnerability and execute arbitrary code. Observe the consequences of the attack and understand the potential risks associated with XSS vulnerabilities.
7	<p>Session Impersonation with Firefox and Tamper Data</p> <ul style="list-style-type: none"> Install and configure the Tamper Data add-on in Firefox. Intercept and modify HTTP requests to impersonate a user's session. Understand the impact of session impersonation and the importance of session management.
8	<p>SQL Injection Attack</p> <ul style="list-style-type: none"> Identify a web application vulnerable to SQL injection. Craft and execute SQL injection queries to exploit the vulnerability. Extract sensitive information or manipulate the database through the SQL injection attack.
9	<p>Creating a Keylogger with Python</p> <ul style="list-style-type: none"> Write a Python script that captures and logs keystrokes from a target system. Execute the keylogger script and observe the logged keystrokes. Understand the potential security risks associated with keyloggers and the importance of protecting against them.
10	<p>Exploiting with Metasploit (Kali Linux)</p> <ul style="list-style-type: none"> Identify a vulnerable system and exploit it using Metasploit modules. Gain unauthorized access to the target system and execute commands or extract information. Understand the ethical considerations and legal implications of using Metasploit for penetration testing.

