

Mahajana Education Society(R)

SBRR Mahajana First Grade College, Post Graduate Wing

(Autonomous)

Affiliated to University of Mysore

Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

Pooja Bhagavat Memorial Mahajana Education Centre

KRS Road, Metagalli, Mysuru - 570016, Karnataka, India.



Department of Studies in Computer Science

Master of Computer Application

MANDATORY DISCLOSURES

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1 Name of the Institution:

Address : SBRR Mahajana First Grade College, PG Wing
Metagalli, KRS Road, Mysuru, Karnataka, India.
E-Mail : info.pgc@mahajana.edu.in
Telephone: +91 821 4009600
Mobile: +91 7483537144

2 Name and Address of the Trust / Society and the Trustees

Name : Mahajana Education Society(R)
Address : Jayalakshmipuram , Mysore, Karnataka
E-Mail : info@mahajana.edu.in
Telephone: +91 821 241 4670, +91 821 251 1921

• Trustee Details

Name	Designation	Mobile Number	Email
SRI. VIJAYKUMAR N Jayalakshmipuram , Mysore, Karnataka	Member	8212512886	
Sri. T MURALIDHAR BHAGAVAT Jayalakshmipuram , Mysore, Karnataka	President	9880244444	tmbmgm@gmail.com
Sri. ASHWATH NARAYAN G.R Jayalakshmipuram , Mysore, Karnataka	Member	9448031971	rajeshnaryan22@gmail.com
SRI P R NAGASRINIVASA Jayalakshmipuram , Mysore, Karnataka	Member	9483299432	prnagasrinivasa1942@gmail.com
SRI GOVINDARAJU S Jayalakshmipuram , Mysore, Karnataka	Member	9886444404	mfigovindaraj@gmail.com
Dr T VIJAYA LAKSHMI MURALIDHAR Jayalakshmipuram , Mysore, Karnataka	Secretary	9880294444	tvm.mgm@gmail.com
SRI RAVIKUMAR B S Jayalakshmipuram , Mysore, Karnataka	Member	9900233125	ravikumar.bs@gmail.com
SRI. SRINATH K B Jayalakshmipuram , Mysore, Karnataka	Member	9880204444	mflsrinath@gmail.com

Name	Designation	Mobile Number	Email
SRI. SANJAY SK Jayalakshmipuram , Mysore, Karnataka	Member	9945159216	casksanjay@gmail.com
SRI. R RAJESH Jayalakshmipuram , Mysore, Karnataka	Member	9448229994	rajesh@bsra.in
SRI. HARISH B Jayalakshmipuram , Mysore, Karnataka	Member	9845561999	harish@ventronics.net
SRI. PRATAP R N Jayalakshmipuram , Mysore, Karnataka	Member	9845124105	prattehalli@gmail.com
SRI. K B RAMA PRAKASH Jayalakshmipuram , Mysore, Karnataka	Member	9900148022	kattepuracpmpraprakasha9@gmail.com
DR. TARANATH N S Jayalakshmipuram , Mysore, Karnataka	Member	8212344716	nstharaantha@gmail.com

3 Name and Address of the Director

Name : Dr.C.K.Renukarya
Address : Metagalli, KRS Road, Mysore Karnataka, India.
E-Mail : ckrenukarya@gmail.com
Telephone : +91 821 2511921
Mobile : +91 9845460047

4 Name of the affiliating University

: University of Mysore

5 Governance

• Governing Council

- Sri. T. Muralidhar Bhagavat, PRESIDENT
- Sri B. S. Ravikumar, VICE PRESIDENT
- Dr. Vijayalakshmi Bhagavat, HON. SECRETARY
- Sri. N. Vijaya Kumar, TREASURER
- Dr. P. R. Naga Srinivasa, MEMBER
- Sri G. R. Ashwatha Narayan, MEMBER
- Sri B. Harish, MEMBER
- Sri. R.N Pratap, MEMBER
- Sri. K. B. Srinath, MEMBER
- Sri. S. Govindaraj, MEMBER

• Academic Council

Sl. No.	Category	Name	Designation	Address for Communication
1	Principal	Dr. B. R. Jayakumari	Principal	SBRR Mahajana First Grade College Jayalakshmipuram, Mysore-570012
2	All Heads of the Departments			
3	Teachers of the College	1. Smt. Venkatalakshmi MN	Associate Professor in Economics	No. 1576, opp. Kadaiah Choultry, Koladasandhi Beedhi, Lashkar Mohalla, Mysore-01
		2. Dr. Thimmegowda H R	Associate Professor	# 252, 20 th Main, 'B' Block, Vijayanagar III Stage, Mysuru - 17
		3. Dr. H N Krishna Kumar	Assistant Professor Dept. Of Botany	No.V/683, 1 st Main Road H.D.Kote, H.D.Kote Taluk, Mysore
		4. Ms. Smitha Grace S R	Assistant Professor Dept. Of Biotechnology	D/o Raju S. #54, 22 nd Block, Madhuvana Layout, Srirampura, 2 nd Stage, Mysore - 23

Sl. No.	Category	Name	Designation	Address for Communication
4	Expert from other areas	Dr. Balasubramanian A	Prof. Dept. of Earth Science	University of Mysore Mysuru
		Dr. Yashawanth Dongre	Prof. of Commerce Director PMEB, UoM	University of Mysore Mysuru
		Dr. Ravi Kumar C N	Ex-Principal, MYCEM College, Mysuru	Mysore College of Engineering and Management, No. 1072, T.N.Road, Chikkahalli, Mysore - 570028.
		Sri M Yogesh Dange	Director of GRS Group of companies	“Prabhu Nivas” # 2664/1A, D-52/A, First Floor, 3 rd Main Road, V. V Mohalla, Mysuru – 570 002
5	Nominees from the University	Prof. Sridhar M A	Professor, DoS in Physics	Manasagangothri, Mysuru
		Prof. Mahesh R	Professor, DoS in Business Management & Administration	Manasagangothri Mysuru
		Prof. Rangarajan R	Professor, DoS in Mathematics	Manasagangothri, Mysuru
6	Faculty Member nominated by the Principal	Dr. Renukarya C K	Member	SBRR FGC Post Graduate Wing, Pooja Bhagavat Memorial Mahajana Education Society, KRS Road, Metagalli, Mysuru
		Dr. Ramesh S R	Member	SBRR Mahajana First Grade College, Jayalakshmpuram Mysuru
		Ms. Geetha D	Assistant Professor in English	No. 227/D, “Ashadeep”, 5 th Cross, Metagalli Extension, KRS Road, Mysore

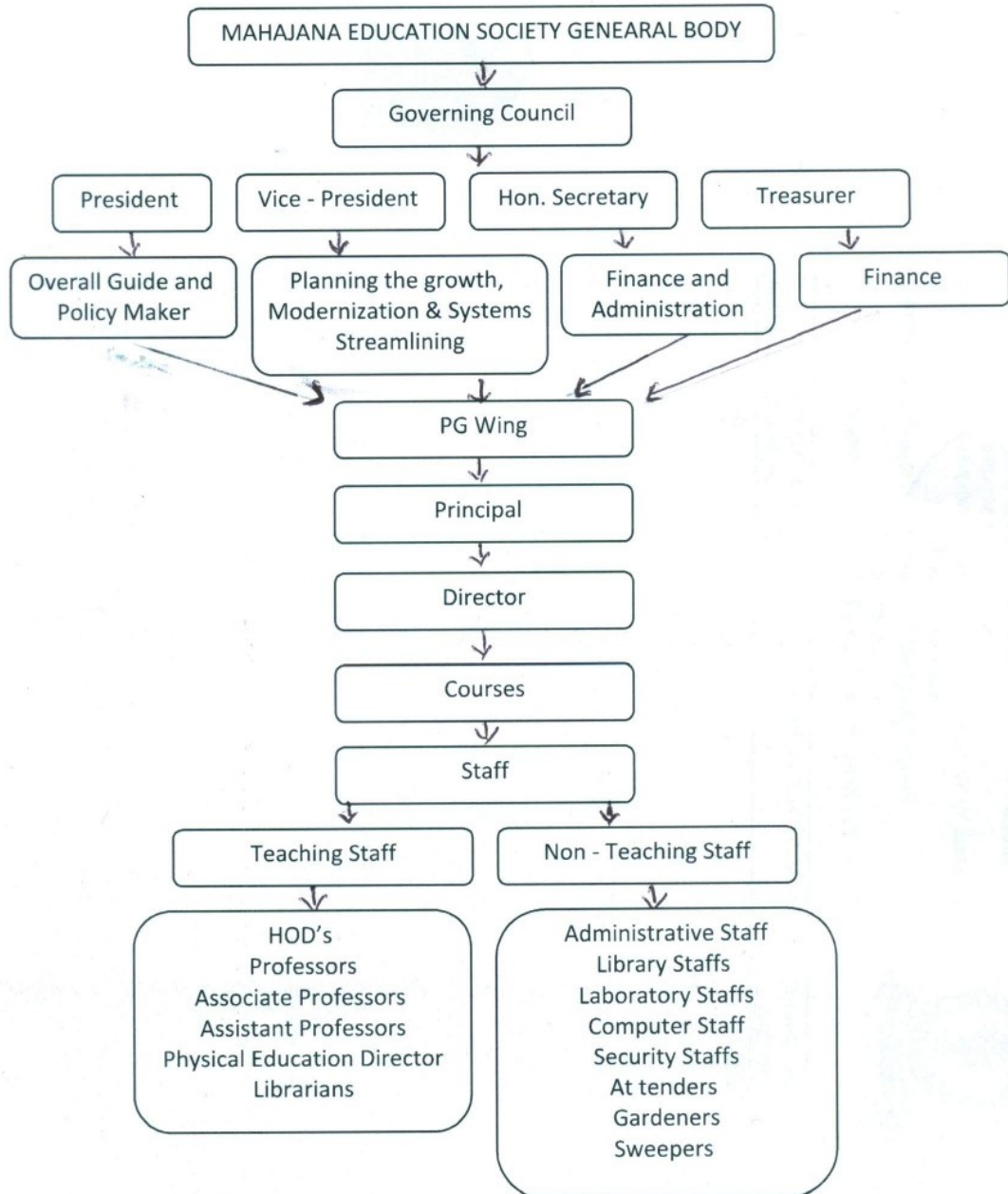
• **Frequency of the Board Meeting and Academic Advisory Body**

- Twice a year

- Organisational Chart

SBBR Mahajana F.G.College. Post graduate Wing

ORGANIZATIONAL CHART



- **Grievance Redressal Cell**

STUDENT GRIEVANCE REDRESSAL COMMITTEE (SGRC)

The following is the revised composition of “STUDENT GRIEVANCE REDRESSAL COMMITTEE (SGRC)” of SBRR Mahajana First Grade College, PG Wing, Pooja Bhagavat Memorial Mahajana Education Centre, K.R.S. Road, Metagalli, Mysore-16, with immediate effect i.e., 04th April, 2022 until further orders in this regard.

Sl.No.	Name	Designation	Position in the Committee	Contact No.
1	Dr. C K Renukarya	Director, PG wing of SBRR Mahajana FG college, Mysuru	Convener	9845460047
2	Mrs. Dhanalakshmi	Associate Professor, MBA Deapartment, PG wing of SBRR Mahajana FG college, Mysuru	Member	9480057441
3	Mr. Srinivas K.R.	Assistant Professor, Commerce Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	9741995677
4	Mr. Basanth Kumar H B	Assistant Professor, Computer Science Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	9611882250
5	Mr Manoj M	Student, MCA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member- Student representative	8147133309

• **Anti Ragging Committee**

ANTI RAGGING COMMITTEE

The following is the revised composition of “Anti Ragging Committee” of SBRR Mahajana First Grade College, PG Wing, Pooja Bhagavat Memorial Mahajana Education Centre, K.R.S. Road, Metagalli, Mysore-16, with immediate effect i.e., 04th April, 2022 until further orders in this regard.

Sl.No.	Name	Designation	Position in the Committee	Contact No.
1	Dr. C K Renukarya	Director, PG wing of SBRR Mahajana FG college, Mysuru	Chairman	9845460047
2	Sri Harish Babu K M	Police Inspector, Metagalli, Mysuru	Member- Police representative	9483373529, 0821- 241 8115
3	Sri S.T Ravi Kumar	Reporter, Star of Mysore, Mysuru	Member- Media representative	0821 249 6520
4	Sri Stanely K V	Director, Odanadi Seva Samsthe, Mysuru	Member-NGO representative	0821-2402155, 0821-2403664
5	Mr. D N Prakash (Parent of Aishwarya P)	Parvathamma Hotel, Durgigudi Main Road, Opposite to Mallikarjuna Theater, Shivmogga-577201	Member- Parent representative	9483307365
6	Dr. Sangamithra Gowtham M J	Assistant Professor, MBA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	9731165052
7	Mrs. Sulochana	Steno cum FDA, PG wing of SBRR Mahajana FG college, Mysuru	Member	8105369115
8	Mr. Shreyas V	Student, MBA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member- Student representative	9731721690
9	Mr. Nagadurga Y	Student, MCA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member- Student representative	829659773
10	Ms. Aishwarya P	Student, MCA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member- Student representative	8088366581

- **Anti Ragging Squad**

ANTI RAGGING SQUAD

The following is the revised composition of “Anti Ragging Squad” of SBRR Mahajana First Grade College, PG Wing, Pooja Bhagavat Memorial Mahajana Education Centre, K.R.S. Road, Metagalli, Mysore-16, with immediate effect i.e., 04th April, 2022 until further orders in this regard.

Sl.No.	Name	Designation	Position in the Committee	Contact No.
1	Dr. Bhavani. M	Associate Professor and HoD, Commerce Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	9449835622
2	Mrs. Rachana C R	Associate Professor and HoD, Computer Science Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	8095645644
3	Mrs. Shruthi Prabhakar	Assistant Professor, Computer Science Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	9986071475
4	Dr. Vivek Balse	Associate Professor, MBA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	9591205060
5	Mr. Madhu Chandran B	Student, MCA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member-Student representative	7813984114

- **Internal Complaint Committee (ICC)**

Internal Complaints Committee(ICC)

The following is the revised composition of “Internal Complaints Committee (ICC)” of SBRR Mahajana First Grade College, PG Wing, Pooja Bhagavat Memorial Mahajana Education Centre, K.R.S. Road, Metagalli, Mysore-16, with immediate effect 04th April, 2022 until further orders in this regard.

Sl. No	Name	Designation	Position in the Committee	Contact No.
1	Dr. Buvaneshwari P.	Professor & HOD, MBA Department, PG wing of SBRR Mahajana FG college, Mysuru	Presiding Officer	9008646243
2	Sri.Parashuram M L	Director, Odanadi Seva Samsthe, Mysuru	Member-NGO representative	0821-2402155, 0821-2403664
3	Dr. Indushekara G.V.	Assistant Professor, Social Work Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	9986966224
4	Mrs.Yashaswini J	Assistant Professor, Computer Science Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	9538779281
5	Mr. Shantharam Bhat	Office superintendent , PG wing of SBRR Mahajana FG college, Mysuru	Member	9449659792
6	Mrs. Ramamani	F.D.A, PG wing of SBRR Mahajana FG college, Mysuru	Member	7760161209
7	Ms. Anusha S	Student, MCA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member-Student representative	9986833533
8	Ms. Keerthana K	Student, MCA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member-Student representative	9900497160
9	Mohammed Moinuddin N	Student, MBA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member-Student representative	7795786637

- **Committee for SC/ST**

SC/ST Committee

The following is the revised composition of “SC/ST Committee” of SBRR Mahajana First Grade College, PG Wing, Pooja Bhagavat Memorial Mahajana Education Centre, K.R.S. Road, Metagalli, Mysore-16, with immediate effect i.e., 04th April, 2022 until further orders in this regard.

Sl.No.	Name of the Faculty	Designation	Position in the Committee	Contact No.
1.	Dr. Divya K. S.	Assistant Professor, Life Science Department, Mahajana PG Centre	Member	9538379588
2	Dr. Sangamithra Gowtham M. J.	Assistant Professor, MBA Department, Mahajana PG Centre	Member	9731165052
3.	Mrs. Bhavana V.	Asst. Professor & HOD, Social Work Department, Mahajana PG Centre	Member	8095831765
4.	Mr. G. Prasanna David	Assistant Professor, Computer Science Department, Mahajana PG Centre	Member	9980095772
5.	Mrs. Shruthi Prabhakar	Asst. Professor, Computer Science Department, Mahajana PG Centre	Member	9986071475

• **Internal Quality Assurance Cell**

Internal Quality Assurance Cell 2021-22

Sl. No.	Name	Designation
1.	Dr. B R Jayakumari, Principal	Chairman
2.	Sri Manjunatha R, Dr. Thimmegowda H R, Dr. Bhavani, Dr. Jyotibala Chauhan	Teachers
3.	Dr. Vijayalakshmi Muralidhar, Hon. Secretary, MES	Management Member
4.	Dr. C K Renukarya, Dr. Ramesh S R	Administrators
5.	Mr. Bhaskar Kalale	Industrialist/Employer/Member
6.	Ms. Shreya Babu	Alumni
7.	Smt. Venkatalakshmi M N Smt. Shyla S	Co-ordinators
8.	Smt. Poornima S	Communication Co-ordinator

• **Student Counselor Committee**

Student Counselor Committee

The following is the revised composition of “STUDENT COUNSELOR COMMITTEE” of SBRR Mahajana First Grade College, PG Wing, Pooja Bhagavat Memorial Mahajana Education Centre, K.R.S. Road, Metagalli, Mysore-16, with immediate effect i.e., 04th April, 2022 until further orders in this regard.

Sl.No.	Name	Designation	Position in the Committee	Contact No.
1	Dr P Chnadrashekar	Assistant Professor, MBA Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	8884293888
2	Dr Indushekar G V	Assistant Professor, Social Work Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	9986966224
3	Mrs. Shobha D	Assistant Professor, Computer Science Department, PG wing of SBRR Mahajana FG college, Mysuru	Member	8867769209
4	Ms. Smitha Grace S R	Assistant Professor, Life science Department PG wing of SBRR Mahajana FG college, Mysuru	Member	9945165301

6 Programmes

• Programmes approved by AICTE :

- Name : Master of Computer Applications
- Number of seats : 60
- Duration : 2 years
- Cut-off marks of admission during the last three years :

Academic Year	Cut-off % for Admission
2021-22	54.16%
2020-21	54.40%
2019-20	51.43%

- Fee :

MCA	I Year		II Year	
	Gov/UoM	Mgmt	Gov/UoM	Mgmt
Karnataka Students	80,000	95,000	80,000	95,000

- Placement Facilities : Pooled Campus / Off-Campus
- Off-Campus Placement in Last Three Years :

Year of Passing	Minimum salary	Maximum salary	No. of Students Placed
2021	18,000	35,000	20
2020	20,000	45,000	18
2019	15,000	45,000	20

-

7 Faculty

- Course/Branch wise list Faculty members : 09
- Permanent Faculty : 09
- Adjunct Faculty : Nil
- Permanent Faculty Student Ratio : 1 : 20
- Number of Faculty employed and left during the last three years :

Year	Faculty	
	Employed	Left
2021-22	9	0
2020-21	8	1
2019-20	9	0

8 Profile of Director / Faculty

- **Profile of the Director**

- Name : Dr.C.K.RENUKARYA
- Date of Birth : 20/04/1942
- Work Experience :
 - Teaching : 52 years
 - Research : 42 years
 - Area of Specialization : Economics
- Research Guidance (Number of Students) :
 - Ph.D. (Completed/Ongoing) : 20 completed
- Research Publications : 20
- No. of Books published : 42



• Profile of Faculty

Mrs. Rachana C.R.

Designation : Associate Professor & HOD

Unique ID : 1-428268176

Date of Birth : 05/11/1981

Qualification: B.E.(CS&E),M.Sc.(IT),M.Phil.,M.Tech.(CNE),(Ph.D.)

Area of Specialization: Computer Network Engineering

Work Experience: Teaching- 17 years, & Research: 3 years

Research: Security in Cloud Computing

Since December 2010 till June 2020, published 20 papers in National/International Journals of repute.

Since April 2007, Presented 7 papers in National/International Conferences.

Has attended a number of Seminars, FDPs, Conferences, and Workshops held in India

Member of professional bodies: Institution of Engineers (India), Computer Society of India, International Association of Engineers (IAENG), International Association of Computer Science and Information Technology (IACSIT).

INVITED AS RESOURCE PERSON/SESSION CHAIR/COMMITTEE MEMBER:

- i. Chaired a session at the National Conference on “Electronics, Signals, Communication (NCESC-2017)” in association with IETE Mysuru Centre and IJCA on the occasion of world Telecommunication day on 29th May 2017 organized by ECE and TCE Dept, GSSSIETW, Mysuru.
- ii. Invited as a resource person to conduct technical sessions at ‘The Institute of Company Secretaries of India (ICSI)’ as part of e-Governance program during 2016 and 2017.
- iii. Invited to deliver a special talk on ‘Cloud Computing: Introduction and Challenges’ at JSS College for Women, Chamarajanagar, Karnataka, India during March 2017.
- iv. Served as Member of Scientific Committee of the 4th International Conference on Applied Materials and Manufacturing Technology held in Nanchang, China during May 25-27, 2018. ICAMMT 2018, Co-hosted by National Defense Key Discipline Laboratory of Light Alloy Processing Science and Technology (Nanchang Hong kong University) and Wuhan University of Science, organized by AEIC Academic Exchange Information Centre.
- v. Reviewed papers submitted to 10th International Conference on Electronics, Communications and Networks (CECNet2020), October 25-28, 2020.

Achievements/Honors/Awards:



- 1 Received Best Oral Presentation award for the video presentation on 'Digital Leap in Indian Education Sector During Covid-19' presented at The 10th International Conference on Electronics, Communications and Networks (CECNet2020), October 25-28, 2020. Online Conference.
- 2 Appointed as expert reviewer on 14th April 2021 with AEIC (Academic Exchange Information Centre). AEIC is a strategic partner of world-leading publishing houses, including IEEE, Springer, Elsevier, Wiley, IoP, EDP, ASME, SAGE, SPIE, Taylor & Francis Group, American Scientific Publishing, DEStech Publications, TTP and Atlantis Press.
- 3 Technical Program Committee Member of 11th International Conference on Electronics, Communications and Networks (CECNet2020), November 18-21, 2021 to be held in Beijing, China.
- 4 Successfully submitted questions as an Expert on AICTE-Student Learning Assessment Project application Portal under specialization- Internet of Things – August 2021.
- 5 Received Certificate of Achievement for completing the course online- Communication and Interpersonal Skills at Work from University of Leeds and Institute of Coding on 19th September 2021.

Other details:

- 1 Has completed one UGC Sponsored Minor Research Project in August 2015.
- 2 Member of Governing body, SBRR Mahajana First Grade College (Autonomous), Mysuru.
- 3 Appointed as B.O.E member, Karnataka State Open University, letter dated 30th April 2020.
- 4 Responsible for establishing the Institution Innovation Council(IIC) as per the norms of Innovation Cell, Ministry of HRD, Govt. of India during IIC Calendar year 2019-20 and serving as The President of IIC at the Institution level.
- 5 On the **Board of Examiners** list of DoS in Computer Science, University of Mysore, Mysuru from past 10+ years.
- 6 Serving as **B.o.S Chairman**, Dept. of MCA & M.Sc. Computer Science (Autonomous Board) since 2019-20.
- 7 Served as **B.O.E. member** at DoS in Computer Science, Mysore University, J.S.S. P.G. Studies (2014-15, 15-16), St. Philomena's College, Centre for Information Science & Technology (CIST) Mysore during 2016- 2019.
- 8 Actively **conducted workshops** on 'Improving Communication Skills' in different schools and colleges of Mysore city. Travelled to different MBA colleges in Karnataka to deliver special lectures on 'Communication Skills'.
- 9 Published a basic text book on Computer Science for PUC students (along with other faculty members of MCA dept.).
- 10 Developed a course material on "Computer Application" for KSOU M.Sc Bio-Technology.
- 11 Worked as a **convener** in a number of national/state/regional level seminars and conferences including one UGC sponsored state level Conference.

PAPERS PUBLISHED:

- 1 Published a paper titled "A Review of Security System in E-Banking" in **NITTE Management Review**, Journal of Justice K. S. Hegde Institute of Management Vol.4, Issue 2, December 2010.
- 2 Published a paper titled "A Review on Peer-to-Peer Networking on the Internet" in the **International Research Journal- Oriental Journal of Computer Science and Technology**, ISSN 0974-6471, Vol.5, No.1, Pgs. 93-98, June 2012.

- 3 Published a paper titled "The Role of Digital Signatures in Digital Information Management" in **ABHINAV International Monthly Refereed Journal of Research in Management and Technology**, ISSN 2320-0073, Impact factor: 0.0812 (2012) for the month of March 2013, Vol. II, Issue: III.
- 4 Published a paper titled "An insight into the world of Wearable Computing" in **International Journal of Science, Engineering and Technology Research (IJSETR)**, ISSN: 2278-7798, Volume 3, Issue 3, March 2014.
- 5 Published a paper (as co-author) titled "Cloud Computing- challenges ahead for Human Resource Managers" in **International Journal of Scientific Research**, ISSN: 2277-8179, Volume 3, Issue 4, April 2014.
- 6 Published a paper titled "An E-Mail Based Solution for Peer to Peer File Download" in **International Journal of Innovative Research & Development**, ISSN 2278 - 0211 (Online), Volume 3, Issue 5, May 2014.
- 7 Published a paper titled 'Mobile Commerce: Opportunities in the Changing Global Environment' in **International Journal of Research in Information Technology (IJRIT)**, ISSN 2001 - 5569 (Online), Volume 3, Issue 3, March 2015.
- 8 Published a paper titled 'Peer - To - Peer File Sharing: Offline Approach' in **International Journal of Innovative Research in Computer and Communication Engineering** (An ISO 3297: 2007 Certified Organization), ISSN (Online): 2320-9801, Vol. 3, Issue 7, July 2015.
- 9 Published a paper titled 'E-Commerce and Cloud Computing-A Survey' in **International Journal of Innovative Research in Computer and Communication Engineering** (An ISO 3297: 2007 Certified Organization), ISSN (Online): 2320-9801, Vol. 4, Issue 8, August 2016. **Impact factor: 6.577**
- 10 Published a paper titled 'Role of ICT Education in Empowering Women' in **International Journal of Management and Social Science Research Review**, Volume 2, Issue 4, February 2017, **Impact Factor: 3.996**, Special Issue- **International Conference on 'Inclusive Business Growth & Sustainable Development'** Organized by Department of Commerce, Kristu Jayanthi College, Bangalore.
- 11 Published a paper titled 'Cloud Computing-A Research Perspective on the Security Issues' in **International Journal of Current Engineering and Scientific Research (IJCESR)**, ISSN 23940697, DOI: 10.21276/ijcesr, Vol. 4, Issue 4, April 2017, **Impact Factor- 3.058.(UGC Approved Journal)**
- 12 Published a paper titled 'Cloud Computing-A Unified Approach for Surveillance Issues' in **IOP Conference Series: Materials Science and Engineering**, Volume 225, conference 1 (2017) 012073 doi:10.1088/1757-899X/225/1/012073, Published under licence by IOP Publishing Ltd., Accepted papers received: 17 July 2017, Published online: 7 September 2017.
- 13 Published a paper titled 'Data Sequestration Issues and Challenges in Cloud Computing: An Analysis and Review' in **Global Journal for Research Analysis**, A Peer Reviewed, Referred, Refereed & Indexed **International Journal**, Volume 06, Issue 12, ISSN: 2277-8160, December 2017, **IMPACT FACTOR: 4.547. (UGC APPROVED JOURNAL)**
- 14 Published a paper titled 'Cloud Computing: the History and Evolution of Software as a Service' in **International Conference on Innovations in Engineering, Technology and Sciences (ICIETS)- 2018** with **ISBN "CFP18Q63-PRT/978-1-5386-7321-8"**, organized by NIE Institute of Technology, Hootagalli Industrial Area, Mysore, Karnataka, during 20th & 21st September 2018.
- 15 Published a paper titled 'The role of Digital Media in the promotion of Tourism in Mysore' in the proceedings of the **National Conference on Tourism and the Digital Transformation- Travel Log 18** with **ISBN 978-81-93115-05-3**, organized by Department of Tourism & Hospitality Management,

- Pooja Bhagavat Memorial Mahajana Education Centre, KRS, Road, Metagalli, Mysuru on 5th & 6th October 2018.
- 16 Published a paper titled 'The role of Digital Media in the promotion of Tourism in Mysore' in **Journal of Emerging Technologies and Innovative Research** – An International Open Access Journal, ISSN 2349-5162, **UGC Approved**, Impact Factor: 5.87, Volume 5, Issue 12, December 2018.
 - 17 Published a paper titled 'A Study on the Trends and Influence of Mobile Applications in Travel & Tourism' in **Journal of Emerging Technologies and Innovative Research** – An International Open Access Journal, ISSN 2349-5162, **UGC Approved**, Impact Factor: 5.87, Volume 5, Issue 12, December 2018.
 - 18 Published a paper titled 'Artificial Intelligence for improvised Digital Marketing Strategies- A Study' in **Journal of Emerging Technologies and Innovative Research** – An International Open Access Journal, ISSN 2349-5162, **UGC Approved**, Impact Factor: 5.87, Volume 6, Issue 3, March 2019.
 - 19 Published a paper titled 'Role of Artificial Intelligence And Machine Learning in Improving Online Shopping Experience- A Review' in **Journal of Emerging Technologies and Innovative Research** – An International Open Access Journal, ISSN 2349-5162, **UGC Approved**, Impact Factor: 5.87, Volume 6, Issue 6, June 2019.
 - 20 Published a paper titled 'Digital Transformation- the Internet of Things- Opportunities and Challenges in Journal of Xidian University. UGC- Care Approved Group 2 Journal. Volume 14, Issue 4, April 2020. Impact factor: 5.4

PAPERS PRESENTED:

- 1 Presented a paper titled 'An Overview of the Smart Cities Mission in India' at the two days online International Conference on "Recent Trends in Computer Science and Information Technology" (ICRCSIT-20) organized by the Departments of Computer Science and Engineering & Information Technology, St. Martin's Engineering College in Association with Computer Society of India, Hyderabad & Global Cyber Security Forum, India on 17th & 18th June, 2020.
- 2 **Presented** a paper titled 'Cloud Computing-A Unified Approach for Surveillance Issues' at the International Conference on Advanced Material Technologies (ICAMT-2016) organized by Dadi Institute of Engineering and Technology, Visakhapatnam, Andhra Pradesh, India during 27th & 28th December 2016.
- 3 **Co-authored and Presented** a paper titled 'Innovative marketing campaigns: Using Digital Marketing as a modern tool for creating promotional strategies' at the National Conference on 'Contemporary Issues in Management' Challenges and Advances in Emerging Markets – NCCIM – 2014 held on 27th September 2014 at Vidyavardhaka College of Engineering, Department of Business Administration, Mysore.
- 4 **Co-authored and presented** a paper titled 'Innovative marketing strategies using technology for creating promotional strategies' at the National Conference on 'Disruptive Marketing- the way forward' on 27th April 2012 held at CMR Institute of Management Studies organized by the Department of Management Program, Bangalore.
- 5 **Co-authored and Presented** a paper titled 'The Broadening horizons and discovery learning in distance education' at the International Conference on Open and Distance Learning in Global Environment: Issues and Challenges held between 21st-23rd Sept. 2011, Mysore.

- 6 **Co-authored a Paper** titled '**E-Learning- the Challenging Problems**' published in the proceedings of the First National Conference on Cryptography & network Security, held during 18th& 19th February 2009 at School of Computing Sciences, VIT University, Vellore, Tamil Nadu.
- 7 **Presented a paper** titled '**Software Project Management- the Essentials**' at **NCSOFT-07** held at **Cochin University of Science and Technology, Cochin** during **April 26, 27, 2007**.

Mr. Basanth Kumar H.B

Designation : Assistant Professor

Unique ID : 1-429559829

Date of Birth : 01/05/1984



Qualification: MCA., (Ph.D)

Area of Specialization: Programming Languages, Machine Learning

Work Experience: Teaching- 13 years & Research: 5 years

Research: Digital Image Forensics

Number of Publications:

International : 7

Workshop : 3

Conference : 3

Seminar : 1

FDP : 4

Member of professional bodies: Computer Society of India.

Other details:

Serving as B.o.S Member, Dept. of MCA (Autonomous Board).

Journal publications

- 1 Basanth Kumar H.B, "**An Overview of Data Mining**", Oriental Journal of Computer Science & Technology, Vol.05, No. (1), pp. 69-73, June 2012.
- 2 Basanth Kumar H.B, "**Web Usage Mining and Business Intelligence**", Oriental Journal of Computer Science & Technology, Vol.06, No. (1), pp. 119-124, March 2013.
- 3 Basanth Kumar H.B, "**A Review on Shot Boundary Detection**", Oriental Journal of Computer Science & Technology, Vol.07, No. (1), pp. 39-44, April 2014.
- 4 Basanth Kumar H.B, "**An Overview on Content-Based Image Retrieval**", Oriental Journal of Computer Science & Technology, Vol.08, No. (1), pp. 39-42, April 2015.
- 5 Basanth Kumar H B, "**Digital Image Watermarking: An Overview**", Oriental Journal of Computer Science & Technology, Vol. 9, No. (1), pp. 07-11, April 2016.
- 6 Basanth Kumar H B, "**Comparative Study on Classification of Digital Images**", Oriental Journal of Computer Science & Technology, Vol. 10, No. (2), pp. 413-416, June 2017.
- 7 Basanth Kumar H B, "Identifying Natural Images and Computer Graphic Images Based on Texture Feature Homogeneity", in Intl. Jrnl. of Current Advanced Research, Vol.7, Issue 4, pp. 12001-12002, April 2018.
- 8 Basanth Kumar H B and H R Chennamma, "**Watermarking of Computer Generated Imagery: A Review**", in Proc. of Third IEEE Intl. Conf. on Electrical, Computer and Communication Technologies, Vol. 3, 1251-1258, 2019.

Papers Presented:

Presented a paper in the national seminar on “Managing in Uncertain Times” organized by B.N. Bahadur Institute of Management Sciences, Manasagangotri, University of Mysore, Mysore, from 30th May to 31st 2008.

MRS. SHOBHA D.



Designation : ASSISTANT PROFESSOR

Unique ID : 1-2188040481

Date of Birth : 21/07/1975

Qualification : M.Sc(CS) , M.Phil

Area of Specialization : Distributed Parallel Processing and Data warehousing

Work Experience : Teaching – 20 years Research: 2 years

Research : Computer Science

Number of Publications:

International : 8

Workshop : 2

Conference : 1

Seminar : 3

FDP : 4

Projects: Developed a software “ Building commencement certificate” to MUDA in 2015.

Other Details :

- Worked as BoE Member for PG in 2015-16.
- Working as BoS Member for PG(Autonomous) from 2019.

Publications :

- 1 Published International paper on “Stages of Growth in Data Warehousing systems and Architecture” in International Journal of Social and Applied Science , Issue 3, vol.no 1,PP:155-162,sep 12.
- 2 Published International paper on “ Mastering the Data Warehouse Design by Bridging the Gap between it and Organization “ in International Journal of Social and Applied Science , Issue 3, vol.no 1,PP:165-168 ,Sep 12.
- 3 Published International paper on “Key success Factors for Data Warehouse Implementation: Analysis” in Oriental Journal of Computer science & Technology , Issue 2, vol.no 7,PP:231-236, August 14.
- 4 Published International paper on “Biometric Cryptosystems: For User Authentication” in International Journal of Innovative Research in Computer and Communication Engineering, Issue 5, Vol 3, pp: 4322-4326, may 15. Impact factor :6.18

- 5 Published International paper on “Survey of Classification Methods and Synchronization of Sentiment analysis and opinion analysis” in International Journal of Innovative Research in Computer and Communication Engineering Issue 5, Vol 4, pp: 9172-9178, may 16. Impact factor :618
- 6 Published International paper on “ Survey on performance analysis of different clustering algorithms” in International journal of research in computer applications and robotics ,vol 5 issue 5, pg61-64,may 2017.
- 7 Published International paper on “ Survey on IOT: Architecture, Technologies, Application” in International journal of scientific research in computer science applications and management studies ,Issue 3, Volume 7, May 2018.
- 8 Published International paper on “ A Survey on Data Science Technologies and Big Data Analytics” in International journal of Information And Computing Science, Volume 6,Issue 6, June 2019.impact factor : 5.2.

Mrs. Yashaswini J.

Designation : ASSISTANT PROFESSOR

Unique ID : 1-2187885425

Date of Birth: 05/10/1988

Qualification: B.E., M.Tech., K-SET.

Area of Specialization: Cryptography and Network Security,
Theory of Languages and Automata.

Work Experience: Teaching- 7.8 years

Number of Publications:

International	:	6
Workshop	:	3
Conference	:	2
Seminar	:	1
FDP	:	3



Member of professional bodies: Institution of Engineers (India)

Other Details: Serving as B.o.S Member for M.C.A. (Autonomous Board), Dept. of Studies in Computer Science, PG Wing of SBRR Mahajana FG College.

Publications:

- “Data Hiding in Encrypted Image With LSB Substitution”, International Journal of Science and Research (IJSR), Issue 6, Vol 2, PP: 125-128 ISSN (Online):2319-7064, June 2013.
- “Key Distribution for Symmetric Key Cryptography: A Review”, International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE), Issue 5, Vol 3, PP:4327-4331ISSN(Online): 2320 – 9801, ISSN (Print): 2320 – 9798, May 2015.
- “A Review on Public Key Cryptography: Algorithms”, International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE), Issue 5, Vol 4, pp:8283-8289ISSN(Online): 2320 – 9801, ISSN (Print): 2320 – 9798, May 2016.
- “A Review on IoT Security Issues and Countermeasures”, Oriental Journal of Computer science & Technology (UGC Approved Journal), 10, No. (2): Pgs. 454-459, ISSN: 0974-6471, June 2017.
- “ An overview on Information Retrieval Models”, International Journal of Science Research in Computer Science Applications and Management Studies(IJSRCSAMS), Vol. 7, Issue 3, ISSN: 2319-1953, May 2018.
- “IoT Consumer Application: Smart Home Literature Review”, International Journal of Information and Computing Science (IJICS), Vol 6, Issue 5, ISSN: 0972-1347, May 2019.

Mr. G. Prasanna David



Designation : ASSISTANT PROFESSOR

Unique ID : 1-3208618420

Date of Birth: 16/06/1977

Qualification: MCA, UGC-NET, K-SET

Area of Specialization: Internetworking, Machine Learning, Natural Language Processing, Free/Open Source Software

Work Experience: Teaching- 14 years & Industry- 1.9 years

Number of Publications:

International	:	2
Workshop	:	1
Conference	:	1
Seminar	:	0
FDP	:	5

Work Experience:

- **PG Wing of SBRR Mahajana First Grade College, Mysore, India. (August 2016 -till date)**
(Autonomous College, Affiliated to University of Mysore)
 - **Assistant Professor**
 - Handling core subjects for MCA and M.Sc. Computer Science
- **JSS College of Arts, Commerce & Science, Mysore, India. (April 2014 - June 2016)**
(Autonomous College, Affiliated to University of Mysore)
 - **Assistant Professor; MIS and Network Administrator**
 - Handled core subjects for M.Sc. Computer Science; Mentored student projects.
 - Configured& managed the Campus Network; Oversaw implementation of MIS.
- **Sampoorna Institute of Technology & Research, Channapatna, India. (Oct 2012 -Mar 2014)**
(Affiliated to Visvesvaraiiah Technological University)
 - **Lecturer**
 - Handled core subjects for BE in Computer Science & Engineering.
 - Managed the Computer labs & IT infrastructure of the College.

- **ZOHO Corporation Private Limited**, Chennai, India. (Feb 2010 – Dec 2011)
 - **Member Technical Staff, Zoho Search Team**
 - Developer at frameworks level: Distributed File System, Indexing & Searching.
 - Zoho Search provides indexing/search framework and User Interface for Cloud-based products of ZOHO including Writer, Sheet, Show, Docs, Recruit, Discussions, Blogs, etc.

- **Gandaki College of Engineering and Science (GCES)**, Pokhara, Nepal. (Jan 2003 – Sep 2008) (Affiliated to Pokhara University. Extension of Gandaki Boarding School (GBS))
 - Deputed by **DANMISSION** (Denmark) and **United Mission to Nepal (UMN)**, Nepal) to GCES.
 - **Lecturer**
 - Handled core subjects for BE in Software Engineering and B.Sc. Computer Science.
 - Mentored student projects and arranged internships and field visits.
 - Designed and maintained the GCES Laboratories and campus network.

- **AU-KBC Research Centre, MIT, Anna University**, Chennai, India. (Dec 1999 – Dec 2002)
 - **System Administrator (Nov 2001 – Dec 2002)**
 - Maintenance and Troubleshooting of the intranet consisting of GNU/Linux, MS Windows and Sun Solaris servers and workstations.
 - Setting up of Internet access for MIT campus and inter-campus link between Anna University and Madras Institute of Technology and packet-filtering firewall.
 - Assisting students and research scholars in understanding and solving networking, operating systems and programming related problems.
 - **System Administrator-in-training**(Aug 2000 – Oct 2001)
 - **Project Trainee** (Dec 1999 – Jul 2000)
 - Natural Language Processing team of AU-KBC (Dec 1999 – Dec 2002)
 - Taught 2 courses for B.Tech (Information Technology) Dual-Degree programme and B.E. Part-Time programme at MIT campus of Anna University (Jun 2002 – Dec 2002).

Professional Services:

- 1 Serving as Member, Board of Studies, Department of Studies in Computer Science (M.Sc. Computer Science), Post Graduate Wing , SBRR Mahajana FG College (Autonomous), Mysuru.
- 2 Served as Member, Board of Studies, Post Graduate Department of Computer Science, JSS College of Arts, Commerce & Science, Mysuru (2015-17).
- 3 Served as Member, Management Committee of the UMN GBS GCES Public Education Trust, Pokhara, Nepal (Sep 2005 – Sep 2008).

Voluntary Services:

Volunteered for the Nepal Wireless Project (2005-2008); worked with Dr.Mahabir Pun. Helped install, configure and maintain nepalwireless.com.np servers and services; Motivated and involved students in establishing communication link to some remote villages and developing services on the network and training villagers.

Journal publications:

International

- 1 Prasanna David G., "**Fake News Detection - A Survey of Machine Learning Techniques**", International Journal of Information and Computing Science, Volume 6, Issue 5, May 2019, pp. 569-573.
- 2 Prasanna David G., "**Forward Caching - Need for a Secure Protocol**", International Journal of Scientific Research in Computer Science and Applications and Management Studies, Volume 7, Issue 3, May 2018.

Mrs. Shruthi Prabhakar

Designation : ASSISTANT PROFESSOR

Unique ID : 1-3208618297

Date of Birth: 04/12/1986



Qualification: B.E(CS&E), M.Tech(CNE)

Area of Specialization: Computer Networking, DBMS

Work Experience: Teaching- 7 years

Number of Publications:

International	:	4
Workshop	:	0
Conference	:	1
Seminar	:	0
FDP	:	2

Achievements :GATE Qualified

Other details:

Serving as B.o.S Member for M.Sc.(Computer Science) (Autonomous Board), Dept. of Studies in Computer Science, PG Wing of SBRR Mahajana FG College.

Journal Publication:

- IJSRD – International Journal For Scientific Research & Development | Vol. 3, Issue 04, 2015 | ISSN (Online): 2321-0613 | Impact Factor – 396, Title: Privacy And Integrity In Multi Wireless Sensor Networks Using Safeq
- IJRCAR – INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATIONS AND ROBOTICS | Issue 5, Pg.: 46-52 May 2017 | SSN 2320-7345 | Impact Factor – 3.775, Title: NETWORK SECURITY INDIGITALIZATION: ATTACKS AND DEFENCE.
- GJRA-GLOBAL JOURNAL FOR RESEARCH ANALYSIS | Volume – 7, Issue – 2, February-2018- ISSN No 2277-8160 | Impact Factor – 5.156, Title: TECHNIQUES FOR WOMEN SAFETY BASED ON INTERNET OF THINGS (IoT)
- JETIRO006014 Journal Of Emerging Technologies And Innovative Research (JETIR) Jetir.Org | ISSN : 2349-5162 UGC Approved & 5.87 Impact Factor Published In Volume 5 Issue 12 , December-2018 | Title: FUTURISTIC AUTOMATED APPLICATION FOR TRAVEL & HOSPITALITY MANAGED OPERATION

Paper Presented:

- Travel Log '18 – Two Days National Level Conference On Tourism And The Digital Transformation – Presented Paper – FUTURISTIC AUTOMATED APPLICATION FOR TRAVEL & HOSPITALITY MANAGED OPERATION

Mr. Shivumanjesh P



Designation : ASSISTANT PROFESSOR

Unique ID : 1-4325377672

Date of Birth: 25/05/1992

Qualification: MCA

Work Experience: Teaching- 2.7 Years & Industry- 1.8 Years

Area of Specialization: Data Science

Number of Publications:

International : 0

Workshop : 4

Conference : 1

Seminar : 0

FDP : 0

Other details:

Serving as B.o.S Member, Dept. of MCA (Autonomous Board).

Journal Publication:

- UGC and ISSN Approved – International Peer Reviewed Journal, Refereed Journal, Indexed Journal| Volume 5 | Issue 12 | 2018-12-06| Impact Factor: 5.87, ISSN: 2349-5162, Title: Emerging Trends in hospitality and tourism with the advent of Digitization.

Paper Presented:

- Travel Log '18 – Two days National Level Conference on Tourism and the Digital Transformation – Presented Paper – Emerging Trends in hospitality and tourism with the advent of Digitization.

Mrs. Shruthy Poonacha

Designation : Assistant Professor

Teaching & Research experience: Teaching: 11 years

Research Interest: Image Processing & Networking



Research and Publication: Research papers/ books/chapter contribution:
State/National/International

Paper Publications

- Paper titled “**Artificial Intelligence**” published for the journal LEELAVATHY-2 which was presented in the National Level Conference hosted by Mathru Vedike (Women Scientists Forum) from 7th to 9th Nov 2009.
- Completed the Minor Research Project in “**Multimodal Biometrics**” and has published the same paper in the Science and Technology Journal ‘Abhinav Journal’. ISSN 2277-1174.
- Presented a paper in state level seminar on **Next Gen Computing & Emerging trends in Future Wireless Internet – A Survey** organized at Pooja Bhagawad Post Graduate College in September 2015.

Funded Research Project:

Completed the Minor Research Project in “**Multimodal Biometrics**” under the CPE grants, and published the same paper in the Science and Technology Journal ‘Abhinav Journal’. ISSN 2277-1174

Seminar/ conference paper presentation: State/National/International

- Paper titled “**Artificial Intelligence**” was presented in the National Level Conference hosted by Mathru Vedike (Women Scientists Forum) from 7th to 9th Nov 2009.
- Presented a paper in state level seminar on **Next Gen Computing & Emerging trends in Future Wireless Internet – A Survey** organized at Pooja Bhagawath Post Graduate College in September 2015.

Seminar/conference workshop organized as coordinator/ organizer etc., (if any) Institutional/State/National/International

- Have been conducting Institutional Level seminars/Special Lectures .
- Organizer of the state level IT seminar on Networking held in October, 2011 at SBRR Mahajana First Grade College, Mysore.

Seminar/conference workshop/FDP attended by the faculty(other than paper presented) State/National/International

- Attended one-day State Level Workshop on **“Accreditation: New Methodology”** organized by SBRR Mahajana First Grade College, Mysore on 29th August 2009.
- Attended International Peace Conference -3 on 6th August 2010.
- Attended one-day National Level workshop on **“Modern Trends in Research Methodology”** organized by Research Cell, SBRR Mahajana First Grade College, Mysore on 20th December 2011.
- Attended UGC sponsored one day National workshop on **“Applications of SPSS in Research Data Analysis”** held on 4th March 2014, organized by the Research Cell, SBRR Mahajana First Grade College, Mysore.
- Attended a state level seminar on **“High Performance Computing”** was jointly conducted by Wipro, Bangalore and HPC Center, Dept. of Studies in Computer Science, Manasagangotri, Mysore on 7th July 2015.
- Attended 2 days workshop on **“Dot Net Technologies”** organized by the Dept. of Computer Science, SBRR Mahajana First Grade College, Mysore on 13th and 14th July 2007.
- Attended workshop on **“Cyber Ethics and Cyber Security”** organized by the Dept. of Computer Science, SBRR Mahajana First Grade College jointly with Reliance World, Mysore on 16th September 2009.
- Attended two days workshop on **“Soft Skills”** organized by the Dept. Computer Science, SBRR Mahajana First Grade College jointly with Kaizen 4Front Technologies Pvt. Ltd, Mysore on 24th and 25th February 2010.
- Attended a workshop on **“Soft skill techniques”** conducted jointly by Mahajana First Grade College, Mysore and Career Forum, Mysore.
- Attended a workshop on **“Faculty Development Programme”** conducted by SBRR Mahajana First Grade College, Mysore on 14th May 2011.
- Conducted and attended the state level IT seminar on Networking held in October, 2011 at SBRR Mahajana First Grade College, Mysore.
- Attended Faculty development organized by KSOU & INFOSYS on 16th, 17th & 18th Feb 2012 at KSOU, Mysore.
- Attended the **Open lecture series on science** jointly conducted by Karnataka Science and Technology Academy and Mahajana First Grade College on 31st March 2012.
- Attended a special lecture on **Approach to Projects –Current Trends and Scope**. The speaker of the Lecture was Mr. Pandu Ranga Rao, CEO, ICAN Technologies, Mysore on 2nd August 2013.
- Attended a special lecture on **Programming Language Pragmatics** By, Dr. Manjunath S Associate Professor, JSS College OOTY Road, Mysore on 26th September 2013.
- Attended seminar cum workshop on **Higher Education-UGC interventions and curriculum Development for co-curricular Activities** on 10th May 2014.
- Attended a special lecture on **“Latest Trends in DBMS”** on **13th September 2014**, organized by the **Department Of Computer Science**, S.B.R.R Mahajana First Grade College, Mysore.
- Attended a faculty development program on **“Developing Teaching Skills”** on 7th Oct 2014, organized by the TQM and IQAC Cell, SBRR Mahajana First Grade College, Mysore.
- Attended a one day workshop on **“Effective Teaching and Learning to new Faculty”** on 7th Nov 2014, organized by the IQAC Cell, Malavalli First Grade College, Malavalli.

Any other contribution by the faculty in academics/society

- BOE member for Computer Science Board, Govt.College(Autonomous), Mandya in the academic year 2016-17.
- Was BOE member for Computer Science Board in the academic year 2012-13.
- Was BOE member for Commerce Board in the academic year 2012-13.
- Was a member in the Syllabus Revision committee for B.Sc and BCA in 2013.
- Worked as a convener for Internal Quality Assurance Cell(IQAC).
- Have been serving as internal guide to the students who are undergoing projects in the BCA course.

Mr. Manjunath K S

Designation : Assistant Professor

Qualification : MCA



Teaching & Research experience:

Teaching: 9 Years

Research Interest: Networking

Seminar/conference workshop organized as coordinator/ organizer etc., (if any)

- Have been conducting Institutional Level seminars/Special Lectures .
- Organizer of the state level IT seminar on Networking held in October, 2011 at SBRR Mahajana First Grade College, Mysore.

Seminar/conference workshop/FDP attended by the faculty(other than paper presented)

- Attended a National Seminar on **Accreditation New Methodology** sponsored by NAAC on 29th August 2009.
- Attended the one-day National level seminar held at Amrita Vidyalaya, Mysore on

Research Methodology on 26th February 2010.

- Attended the one day International Seminar on **Digital Image Processing and Pattern**

Recognition held at Government College, Mandya (Autonomous) on 13th March 2010.

- Attended a workshop on **“SOFT SKILLS”** organized by the Department of Computer Science, SBRR Mahajana First Grade College Jointly with Career Forum, Mysore on 4th February 2011.
- Attended the **Open lecture series on science** jointly conducted by Karnataka Science and Technology Academy and Mahajana First Grade College on 31st March 2012.
- Attended one day national seminar on **“Recent tools for Dimensionality reduction in understanding medical data”** on 22/09/2013 held at JSS College for women, Chamarajanagar along with 2 students.

- Attended UGC sponsored one day National workshop on “**Applications of SPSS in Research Data Analysis**” held on 4th March 2014, organized by the Research Cell, SBRR Mahajana First Grade College, Mysore.
- Attended the 3-day workshop **FEEL Teacher Programme** which was held in Mahajana PG Wing on March 16th, 17th & 18th Attended a workshop on “**E-Governance**” conducted jointly by Department of Computer Science, Mahajana First Grade College, Mysore.
- Attended a workshop on “**Faculty Development Programme**” conducted by Mahajana First Grade College, Mysore on 14th May 2011.
- Attended a special lecture on **Approach to Projects –Current Trends and Scope**. The speaker of the Lecture was Mr. Pandu Ranga Rao, CEO, ICAN Technologies, Mysore on 2nd August 2013.
- Attended a special lecture on **Programming Language Pragmatics** By, Dr. Manjunath S Associate Professor, JSS College OOTY Road, Mysore on 26th September 2013.
- Attended a faculty development program on “**Developing Teaching Skills**” on 7th Oct 2014, organized by the TQM and IQAC Cell, SBRR Mahajana First Grade College, Mysore.
- Attended One day faculty development programme on “**Technical Soft Skills**” organizes by the Department of Computer Science Teachers Association on February 09 2017

Training or Consultancy Offered:

- Worked as a coordinator for certificate course in e-governance and Web designing certificate course.

Any other contribution by the faculty in academics/society

- Was a member in the Syllabus Revision committee for B.Sc and BCA in 2013.
- Have been serving as internal guide to the students who are undergoing projects in the BCA course.
- Organized cricket and throw ball tournament towards charity.
manjunathks.fgc@mahajana.edu.in manjunathks102@gmail.com

9 Fee:

- Details of Fee, as approved by State Fee Committee, for the Institution

MCA	I Year		II Year	
	Gov/UoM	Mgmt	Gov/UoM	Mgmt
Karnataka Students	80,000	95,000	80,000	95,000

- Time schedule for payment of Fee for the entire Programme :
Yearly. As per the admission calendar of Karnataka Examinations Authority (KEA) – PG CET.

10 Admission

- Number of seats sanctioned with the year of approval

Year	Sanctioned
2021-22	60
2020-21	60
2019-20	30
2018-19	30

- Number of Students admitted under various categories each year in the last three years

Year	GM	SC	ST	CAT 1	2A	2B	3A	3B	TOTAL
2021-22	6	4	2	1	14	3	22	8	60
2020-21	13	5	1	2	9	2	14	14	60
2019-20	1	-	-	-	5	-	3	10	19

- Number of applications received during last two years for admission under Management Quota

Year	Applications Received	Admitted
2021-22	30	30
2020-21	30	30

11 Admission Procedure :

• Admission Test being followed :

1.1 PG CET, Karnataka Examinations Authority(KEA)

- 18th Cross, Sampige Road, Malleshwaram, BANGALORE-560 012
- keauthority-ka@nic.in, <https://kea.kar.nic.in>

1.2 KMAT, Karnataka Private Post Graduate Colleges' Association

- No. 64, Vastra Bhavan, 4th Main, Near 18th Cross, Malleshwaram, Bangalore 560055
- info@kmatindia.com, <https://kmatindia.com/>

•Number of Seats Allotted :

- Government Quota (PGCET) : 30
- Management Quota (PGCET/KMAT) : 30

• Calendar for admission against Management/vacant seats:

: As per KEA / KMAT admission schedule

- Last date of request for applications : As per KEA admission schedule
- Last date of submission of applications : As per KEA admission schedule
- Dates for announcing final results : As per KEA admission schedule
- Release of admission list : As per KEA admission schedule
- Date for acceptance by the candidate : As per KEA admission schedule
- Last date for closing of admission : As per KEA admission schedule
- Starting of the Academic session : As per KEA admission schedule

12 Criteria and Weightages for Admission :

As per the Karnataka Examination Authority guidelines.

MARKS SCORED BY MCA CANDIDATES ADMITTED UNDER GOVERNMENT QUOTA			
Sl. No.	Name	Degree %	KEA Rank
1	Aishwarya Sri	69.11	2426
2	Akash R.	58.61	4977
3	Anjali J.	75.10	2324G55
4	Anupam A. Neelavar	63.37	3454
5	Avinash S.	75.54	2341
6	Bhoomika	70.02	1859
7	Dhanyashree N.R.	87.83	1682
8	K.R. Nanditha	79.76	2033
9	Keerthana K.	8.58 (CGPA)	2874
10	Khaliq Ur Rahman	67.5	3114
11	Kokila S.	66.23	4619
12	LalBahaddur M.	59.47	3850
13	MuskanSaniya	59.12	3847
14	Nikhil G.	72.27	2116
15	Nikhil M.	70.87	2138
16	Niranjan V.S.	72.07	4785
17	Nishchitha A.	74.2	3687
18	Pavan T.	74.77	2361
19	Pooja M.	8.34 (CGPA)	2275
20	Prathiksha N.K.	81.2	1150
21	SaaraKruthibharaj M.B.	76.43	4707
22	Sagar M. Gowda	5.51 (CGPA)	1440G55
23	Sahana R.V.	75.47	3302

24	Sanjay M.	64.37	1914
MARKS SCORED BY MCA CANDIDATES ADMITTED UNDER MANAGEMENT QUOTA			
Sl. No.	Name	Degree %	KEA Rank / KMAT Percentile
1	Akash H.M.	55.17	4979
2	Anirudh H.P.	70.52	6289
3	Ankitha S.B.	78.80	6486
4	Anusha S.	58.75	8490
5	B.N. Karthik	59.83	4.32 (KMAT Percentile)
6	Bharath H.L.	57.20	8270
7	Bindu	64.95	7706
8	Deepa Venkatalakshmi G. Hebbar	69.51	7207
9	Druvakumar N.J.	65.00	5.40(KMAT Percentile)
10	Gangadhargowda M.	58.27	2802
11	Harshitha L.	70.00	6640
12	Jahnvi R.S.	57.04	7922
13	Lavanya S.	72.60	25.68(KMAT Percentile)
14	Leelanka C.	71.60	3098
15	Madhu N.M.	59.47	2490
16	Madhuchandran B.	60.30	3121
17	Manoj M	54.49	7.11(KMAT Percentile)
18	Mohan M.	7.01 (CGPA)	6921
19	Naveen Gowda K.	59.93	5721
20	Nishapatel K.	54.16	4996
21	P. Aishwarya	63.42	5711

22	Praveen R.	76.84	4738
23	Raghavendra P.	65.67	5708
24	Rakshitha K.	61.40	7308
25	Ramya D.U.	75.86	7812
26	Sambhram S.S.	71.50	5880
27	Samuel P.	80.15	3959
28	ShishirSrivathsa S.	54.43	4997
29	Shruthi P.	62.27	6726
30	Shwetha K.N.	74.66	6547
31	Sindhu K.S.	65.20	3073
32	Suraj H.A.	63.43	6646
33	Syed Shabaz	62.60	7005
34	Thanusha K.L.	71.78	5182
35	Thejaswini S.	76.03	5451
36	Varshitha S.	8.08 (CGPA)	4692

13 List of Applicants

- List of candidate whose applications have been received along with percentile/percentages core for each of the qualifying examination in separate categories for open seats. List of candidate who have applied along with percentage and percentile score for Management quota seats (merit wise)

<u>LIST OF APPLICANTS UNDER GOVERNMENT QUOTA</u>			
Sl. No.	Name	Degree %	KEA Rank
1	Aishwarya Sri	69.11	2426
2	Akash R.	58.61	4977
3	Anjali J.	75.10	2324G55
4	Anupam A. Neelavar	63.37	3454
5	Avinash S.	75.54	2341
6	Bhoomika	70.02	1859
7	Dhanyashree N.R.	87.83	1682
8	K.R. Nanditha	79.76	2033
9	Keerthana K.	8.58 (CGPA)	2874
10	Khaliq Ur Rahman	67.5	3114
11	Kokila S.	66.23	4619
12	LalBahaddur M.	59.47	3850
13	MuskanSaniya	59.12	3847
14	Nikhil G.	72.27	2116
15	Nikhil M.	70.87	2138
16	Niranjan V.S.	72.07	4785
17	Nishchitha A.	74.2	3687
18	Pavan T.	74.77	2361
19	Pooja M.	8.34 (CGPA)	2275
20	Prathiksha N.K.	81.2	1150

21	SaaraKruthibharaj M.B.	76.43	4707
22	Sagar M. Gowda	5.51 (CGPA)	1440G55
23	Sahana R.V.	75.47	3302
24	Sanjay M.	64.37	1914
LIST OF APPLICANTS UNDER MANAGEMENT QUOTA			
Sl. No.	Name	Degree %	KEA Rank / KMAT Percentile
1	Akash H.M.	55.17	4979
2	Anirudh H.P.	70.52	6289
3	Ankitha S.B.	78.80	6486
4	Anusha S.	58.75	8490
5	B.N. Karthik	59.83	4.32 (KMAT Percentile)
6	Bharath H.L.	57.20	8270
7	Bindu	64.95	7706
8	DeepaVenkatalakshmi G. Hebbar	69.51	7207
9	Druvakumar N.J.	65.00	5.40(KMAT Percentile)
10	Gangadhargowda M.	58.27	2802
11	Harshitha L.	70.00	6640
12	Jahnvi R.S.	57.04	7922
13	Lavanya S.	72.60	25.68(KMAT Percentile)
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15	Madhu N.M.	59.47	2490
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18	Mohan M.	7.01 (CGPA)	6921
19	Naveen Gowda K.	59.93	5721
20	Nishapatel K.	54.16	4996
21	P. Aishwarya	63.42	5711
22	Praveen R.	76.84	4738
23	Raghavendra P.	65.67	5708
24	Rakshitha K.	61.40	7308
25	Ramya D.U.	75.86	7812
26	Sambhram S.S.	71.50	5880
27	Samuel P.	80.15	3959
28	ShishirSrivathsa S.	54.43	4997
29	Shruthi P.	62.27	6726
30	Shwetha K.N.	74.66	6547
31	Sindhu K.S.	65.20	3073
32	Suraj H.A.	63.43	6646
33	Syed Shabaz	62.60	7005
34	Thanusha K.L.	71.78	5182
35	Thejaswini S.	76.03	5451
36	Varshitha S.	8.08 (CGPA)	4692

14 Results of Admission Under Management seats/Vacant seats

- Composition of selection team for admission under Management Quota with the brief profile of members
 - Dr. C.K. Renukarya , Director, PG Wing of SBRR Mahajana First Grade College.
 - Dr. Buvaneswari P, Professor & HoD, DoS in Business Administration.
 - Mr. Basanth Kumar H. B., Assistant Professor & HoD, DoS in Computer Science.

- Score of the individual candidate admitted arranged in order of merit & List of candidate who have been offered admission

LIST OF APPLICANTS ADMITTED UNDER MANAGEMENT QUOTA			
Sl. No.	Name	Degree %	KEA Rank / KMAT Percentile
1	Akash H.M.	55.17	4979
2	Anirudh H.P.	70.52	6289
3	Ankitha S.B.	78.80	6486
4	Anusha S.	58.75	8490
5	B.N. Karthik	59.83	4.32 (KMAT Percentile)
6	Bharath H.L.	57.20	8270
7	Bindu	64.95	7706
8	DeepaVenkatalakshmi G. Hebbar	69.51	7207
9	Druvakumar N.J.	65.00	5.40(KMAT Percentile)
10	Gangadhargowda M.	58.27	2802
11	Harshitha L.	70.00	6640
12	Jahnavi R.S.	57.04	7922
13	Lavanya S.	72.60	25.68(KMAT Percentile)
14	Leelanka C.	71.60	3098
15	Madhu N.M.	59.47	2490

16	Madhuchandran B.	60.30	3121
17	Manoj M	54.49	7.11(KMAT Percentile)
18	Mohan M.	7.01 (CGPA)	6921
19	Naveen Gowda K.	59.93	5721
20	Nishapatel K.	54.16	4996
21	P. Aishwarya	63.42	5711
22	Praveen R.	76.84	4738
23	Raghavendra P.	65.67	5708
24	Rakshitha K.	61.40	7308
25	Ramya D.U.	75.86	7812
26	Sambhram S.S.	71.50	5880
27	Samuel P.	80.15	3959
28	ShishirSrivathsa S.	54.43	4997
29	Shruthi P.	62.27	6726
30	Shwetha K.N.	74.66	6547
31	Sindhu K.S.	65.20	3073
32	Suraj H.A.	63.43	6646
33	Syed Shabaz	62.60	7005
34	Thanusha K.L.	71.78	5182
35	Thejaswini S.	76.03	5451
36	Varshitha S.	8.08 (CGPA)	4692

15 Information of Infrastructure and Other Resources Available

Information of Infrastructure and Other Resources Available		
Number of Class rooms and size of each	SCR-A1	76 sq. m
	SCR-A2	76 sq. m
	SCR-A3	76 sq. m
Number of Tutorial rooms and size of each	TCR-A3	48 sq. m
	TCR-A4	47 sq. m
Number of Laboratories and size of each	LAB-1	88 sq. m
	LAB-2	88 sq. m
	LAB-3	87 sq. m
	LAB-4	85 sq. m
Number of Drawing Halls with capacity of each	No	
Number of Computer Centres with capacity of each	1	189 sq. m
Central Examination Facility, Number of rooms and capacity of each	Rooms	Capacity of each
	10	30
Online examination facility (Number of Nodes, Internet bandwidth, etc.)	No	
Barrier Free Built Environment for disabled and elderly persons	Yes	
Hostel Facilities	Girls student hostel available in Post Graduate Wing Campus. Boys student hostel available in the Under Graduate Wing campus.	

• Occupancy Certificate



ಕಾರ್ಯದರ್ಶಿ
Cell : 9686677938

ಸಿದ್ದಲಿಂಗಪುರ ಗ್ರಾಮ ಪಂಚಾಯತಿ ಕಾರ್ಯಾಲಯ

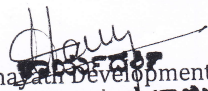
ಸಿದ್ದಲಿಂಗಪುರ, ಮೈಸೂರು ತಾಲ್ಲೂಕು

ಸಿ. ಗ್ರಾ. ಪಂ. ನಂ. 351/09-10

ದಿನಾಂಕ : 10.02.2010

POSSESSION CERTIFICATE

The Possession In Survey Nos. 21(C Part) , 24/2A1(Part),24/2A2, 24/2/B (part), 27/1 (Part), 27/2 , 27/d (Part) , 27/4 , 27 /5 (Part) of Mysore Industrial Area situated at Metagalli , KRS Road , Mysore - 570016. has been handed over to Mahajana Education Society® by M/s. Kasturi Foods and Chemicals Limited on 26/02/2002.


Panchayat Development Officer
ಸಿದ್ದಲಿಂಗಪುರ ಗ್ರಾಮ ಪಂಚಾಯತಿ
ಮೈಸೂರು ತಾಲ್ಲೂಕು


President


Non-Secretary
MAHAJANA EDUCATION SOCIETY (Regd.)
Jayalakshimpuram, Mysore-570 012.

• Fire and Safety Certificate

No:15/CFO/MZ/CC/2022-23

Office of the Chief Fire Officer
Karnataka Fire & Emergency Services
Mysuru Zone, Hebbala, Mysuru-570016

Date: 27/04/2022

To,
The Director
SBRR Mahajana F.G.College (Autonomous)
Post Graduate wing
PBM Mahajana Education Center
K.R.S Road, Metagalli, Mysuru

Sir,

Sub:- Issue Renewal of Fire Safety Compliance certificate with respect to fire prevention, Fighting and evacuation measures maintained/required at "SBRR Mahajana F.G.College (Autonomous)" Post Graduate wing, PBM Mahajana Education Center building at K.R.S Road, Metagalli, Mysuru.

Ref:- 1. This office letter no.14/FSR/CFO/MZ/2019, dated: 12-02-2019.
2. C.C. Renewal no.05/CFO/MZ/CC/2021-22, dated: 10-04-2021.
3. Your request letter dated: 01-04-2022.

With reference to the above cited subject, as per reference (1) a Fire Safety Recommendations Certificate was issued to the College management for the observations are rectified within 90 days.

As per reference (2) the College management rectified the observations, submitted the staffs training certificates and other requirements and 'Renewal of Fire Safety Compliance Certificate' was issued.

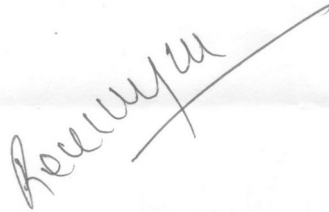
Now as per reference (3) the College management submitted letter and requested for Renewal of Fire Safety Compliance Certificate.

In this regard SBRR Mahajan F.G.college (Autonomous), Post Graduate wing, PBM Mahajana Education Center building K.R.S Road, Metagalli, Mysuru was re-inspected by me on 21-04-2022 & found that the College Management has been fulfilled the fire fighting systems and the fire fighting systems are in good working condition during my inspection.

Hence, herewith issuing 'Renewal of Fire Safety Compliance Certificate' for the functioning of SBRR Mahajan F.G.college (Autonomous), Post Graduate wing, PBM Mahajana Education Center building K.R.S Road, Metagalli, Mysuru from fire prevention, fire fighting and evacuation point of view. This Renewal of 'Fire Safety Compliance Certificate' valid for only one year from the date of issued and is renewable.

Yours faithfully


Chief Fire Officer
Karnataka Fire & Emergency Services
Mysuru Zone, Hebbala Fire Station
MYSURU-570016




25/4/2022

- **Library**

- Number of Library books/ Titles/ Journals available (Programme-wise)

Programme	Volumes	Titles	Journals available
MCA	7530	3651	19

- List of online National/ International Journals subscribed : J-GATE, N-LIST, DELNET
- National Digital Library (NDL) Membership Number : INKANC34KOWMGAZ

- **Laboratory and Workshop**

- List of Major Equipment/Facilities in each Laboratory:
 - Server, Computer Systems, Projector, Projector Screen, Printer, Scanner, Online UPS, Stabilizer & AC

- **Computing Facilities**

Internet Bandwidth	300 MBPS
Configuration of System	Number
ML350G5 PROCESSOR-XEON 2.33 GHz, 2 GB RAMS, HARD DISK-250 GB.	2
Dell System- Processor = Core i5, 3.0 GHz, HDD = 500 GB, RAM = 8 GB	30
Dell System Processor = Core i3, 3.60 GHz, HDD = 1 TB, RAM = 4 GB	1
Processor = Core i3, 3 GHz, HDD = 1 TB, RAM = 2 GB,	1
Acer System Processor = Core i3, 3 GHz, HDD = 500GB, RAM = 4 GB, LCD	8
Acer System Processor = Core i3, 3 GHz, HDD = 1 TB, RAM = 4 GB	20
Dell System- Processor = Core i5, 3.10 GHz, HDD = 1 TB, RAM = 8 GB	30
HP Systems Processor = Core (2)duo, 2.53Ghz, HDD = 250 GB, RAM = 3GB, LCD	2
HP Systems Processor = Core (2)duo, 2.53Ghz, HDD = 250 GB, RAM = 3GB, LCD	17
HCL System- A350 Pro INTEL CORE i3 processor , HDD = 320 GB, RAM = 4 GB RAM	2

Total number of system connected by LAN		145
Total number of system connected by WAN		145
Major software packages available		
Sl No.	SOFTWARE	No. Of CD'S
1	BORLAND TURBO C++ SUITE	15
2	MICROSOFT OFFICE 2007	165
3	MICROSOFT OFFICE 2010	33
4	VISUAL STUDIO 2010	30
5	VISUAL STUDIO 2002	1
6	WINDOWS SERVER 2003	1
7	WINDOWS SERVER 2008	3
8	MICROSOFT WINDOWS VISTA	165
9	MICROSOFT WINDOWS XP	10
10	MICROSOFT WINDOWS 7	23
11	ORACLE	1
12	REDHAT	45
13	SMART DRAW	30
14	WINPROXY	25
15	MICROSOFT WINDOWS 10	40
Special purpose facilities available (Conduct of online Meetings/ Webinars /Workshops, etc.)		Yes
Facilities for conduct of classes/courses in online mode (Theory & Practical)		Yes

• **Innovation Cell :**

- New Age Innovation Network (NAIN) – District Innovation Hub (DIH), launched under KITS, Government of Karnataka.

- **Games and Sports Facilities**

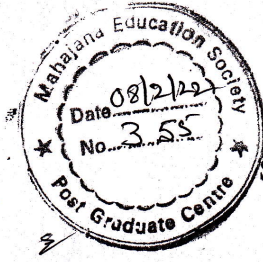
- Volley Ball court (clay) x1
- Shuttle Batminton court (indoor) x2
- Lawn Tennis court (cement) x1
- Basket Ball court (cement) x1
- Table Tennis board x2
- Carrom board x2

- **Teaching Learning Process**

- **Curricula and syllabus** :

Refer to Annexure 1 (Page No. 128) & Annexure 2 (Page No. 190)

• Academic Calendar of the University :



Mahajana Education Society (R)
Education to Excel
SBRR Mahajana First Grade College (Autonomous)
 Jayalakshmpuram, Mysuru – 570 012 Karnataka, INDIA
 Affiliated to University of Mysore,
 Re-Accredited by NAAC with 'A' Grade, College with Potential for Excellence

SRRE/MEGC/.....1006/2021-22

05.02.2022

University order AC7(A)/456/2016-17 dated 31.01.2022

Academic Calendar for I & II Semester PG Programs CBCS 2021-22

Sl. No	Particulars	Dates
1	Admission Process in the PG departments	28.09.2021
2	Last date for Admission for I Semester without fine	31.01.2022
3	Last date for Admission for I Semester with fine	15.02.2022
4	Commencement of I Semester classes	09.02.2022
5	Last working day of the I Semester Programs	07.06.2022
6	Mid-term vacation I Semester (including conducting of Examination and Valuation work)	08.06.2022 to 30.06.2022
7	Commencement of I Semester examination	08.06.2022
8	Commencement of II Semester classes	01.07.2022
9	Last working day of the II Semester	31.10.2022
10	Terminal vacation (including conducting of Examination and Valuation work for Even semesters)	02.11.2022 to 30.11.2022
11	Commencement of the II Semester Examination	03.11.2022

Note:

1. If a particular day is declared as a holiday or happens to be holiday then the Corresponding event will come in to effect on the next working day.
2. Notification regarding Calendar of events relating to the conduct of Examinations will be issued by the Controller from time to time.

Venkatalakshmi MN (th)
 (Venkatalakshmi MN)
 DEAN-ACADEMICS

Smt. Bhagyalakshamma Rattihalli Ramappa
 Mahajana First Grade-College (Autonomous)
 Jayalakshmpuram, MYSURU-570 012

1. Hon. Secretary, MES
2. Administrative Officer, MES
3. MES Office
4. Principal's Office
- ✓ 5. Director, PG Centre
6. Director's Office
7. Director - Tourism Department
8. Office of The Controller of Examinations

*Ref: All Heads
 All Calendars
 First 4/5/22*

Dr. B R Jayakumari
 (Dr. B R Jayakumari)
 PRINCIPAL

Smt. Bhagyalakshamma Rattihalli Ramappa
 Mahajana First Grade College (Autonomous)
 Jayalakshmpuram MYSURU-570 012

Swati to Director
Swati
 RECV
 DIRECTOR

- Internal Continuous Evaluation System and place : Yes
- Student's assessment of Faculty, System in place : Yes

• **Academic Time Table :**

PG Wing of SBRR Mahajana First Grade College (Autonomous)
 Pooja Bhagavat Memorial Mahajana Education Centre
 KRS ROAD, METAGALLI, MYSORE - 16
 Department of Studies in Computer Science (MCA & M.Sc.(CS))
I, IV & VI Semester MCA Time Table – 2021 - 22

		10.00 - 11.00	11:00-11:15	11.15-12.15	12.15-1.15	1:15-2:00	2.00-3.00	3.00-4.00
Mon	I MCA	MFCA (YJ)	Tea Break	OS(GPD)	DBMS (SP)	Lunch break	B1: DS&A Lab(HBB, SD)-MCA Lab 1 / B2: DBMS Lab(SP, SMP)-MScCS Lab 1	
Tue	I MCA	MFCA (YJ)		DBMS (SP)	OS(GPD)		B2: DS&A Lab(HBB, SD)-MScCS Lab 1 / B3: DBMS Lab(SP, SMP)-MScCS Lab 2	
Wed	I MCA	OS(GPD)		DC&N (SMP)	DS&A (SD)		B3: DS&A Lab(HBB, SD)-MScCS Lab 2 / B1: DBMS Lab(SP, SMP)-MCA Lab 1	
Thu	I MCA	OS(GPD)		DS&A (SD)	DS&A (HBB)		MFCA (YJ)	
Fri	I MCA	DS&A (HBB)		MFCA (YJ)	DC&N (SMP)		DC&N (SMP)	
	IV MCA	CS (SMP)		PE&HV (SD)	PE&HV (SD)		Project Guidance	
	VI MCA			V&E (SP)	V&E (RCR)		Project Guidance	
Sat	I MCA	DC&N (SMP)	DBMS (SP)		Online Classes :			
	IV MCA	PE&HV (SD)	PE&HV (SD)	CS (SMP)	IV MCA : CS (SMP) x 2			
	VI MCA			Project Guidance	VI MCA : V&E (RCR) x 1, V&E (SP) x 1			
I MCA				IV MCA				
MFCA	Mathematical Foundations for Computer Applications (HC) - YJ				PE&HV	Professional Ethics and Human Values(SC) – SD		
DS&A	Data Structures and Algorithms(HC) – HBB, SD				CS	Communication Skills(SC) – SMP		
OS	Operating System(HC) – GPD						VI MCA	
DC&N	Data Communications and Networks (SC) – SMP				V&E	Values & Ethics(SC) – RCR, SP		
DBMS	Database Management System(SC) – SP							

HOD
Mrs. Rachana C. R.

Director
Dr. C.K. Renukarya

• Teaching Load of each Faculty :

Mahajana Education Society®
PG Wing of SBRR Mahajana First Grade College, Autonomous
POOJA BHAGAVAT MEMORIAL MAHAJANA EDUCATION CENTRE
 Metagalli, K.R.S Road, Mysuru - 570016.
Department of M.C.A. and M.Sc. Computer Science
Individual Faculty Workload for I, IV and VI Semester
Odd & Even Semester, 2022

Sl. No.	Name of Faculty	Course	Subject	Theory	Practical	Project	Total
1.	Mrs. Rachana C. R. (RCR)	VI MCA	V&E	2	-	3	9
		I M.Sc.(CS)	CS	4	-		
2.	Mr. H.B. Basanth Kumar (HBB)	I MCA	DS&A	2	3	3	13
		I M.Sc.(CS)	JP	3	2		
3.	Mrs. Shobha D. (SD)	IV MCA	PE&HV	4	-	3	14
		I MCA	DS&A	2	3		
		I M.Sc.(CS)	DC	2	-		
4.	Mrs. Yashaswini J. (YJ)	I MCA	MFCA	4	-	3	12
		I M.Sc. (CS)	DMS	4	-		
			JP	-	1		
5.	Mr. G. Prasanna David (GPD)	I MCA	OS	4	-	3	14
		IV M.Sc.(CS)	DM	4	-		
		I M.Sc.(CS)	DC	2	-		
		I M.Sc.(CS)	JP	-	1		
6.	Mrs. Shruthi Prabhakar (SP)	VI MCA	V&E	2	-	3	15
		I MCA	DBMS	3	3		
		I M.Sc.(CS)	ADS	4	-		
7.	Mr. Shivumanjesh P. (SMP)	IV MCA	CS	4	-	3	14
		I MCA	DBMS	-	3		
			DC&N	4	-		

I MCA			I M.Sc. (CS)		
MFCA	Mathematical Foundations for Computer Applications	YJ	DMS	Discrete Mathematical Structures	YJ
DS&A	Data Structures and Algorithms	HBB, SD	ADS	Advanced Data Structures	SP
OS	Operating System	GPD	DC	Data Communication	SD, GPD
DC&N	Data Communication and Networks	SMP	JP	Java Programming	HBB
DBMS	Database Management Systems	SP	CS	Communication Skills	RCR
IV M.Sc. (CS)			Faculty		
DM	Data Mining	GPD	RCR	- Rachana C.R	
			HBB	- H B Basanth Kumar	
IV MCA			SD	- Shobha D	
PE&HV	Professional Ethics and Human Values	SD	YJ	- Yashaswini J	
CS	Communication Skills	SMP	GPD	- G Prasanna David	
			SP	- Shruthi Prabhakar	
VI MCA			SMP	- Shivumanjesh P.	
V&E	Values & Ethics	RCR, SP			

16 Enrollment and Placement details of Students in the last 3 years

Year of Passing	No. of Students Enrolled	No. of Students Placed
2021	30	20
2020	30	18
2019	30	20

17 List of Research Projects / Consultancy Works

- MoUs with Industries:

MOU's signed by DOS in Computer Science,

SBRR Mahajana First Grade College, PG Wing

Sl. No	MOU with	Address and Contact No	Purpose of MOU	Date of MOU
1	iQuest Technologies	No 331 – B, KIADB Hebbal Industrial Area, Opp . Infosys Gate #2, Mysore-570016 Ph No:96861 44882	To conduct skill development and software training programs.	01 st December 2015
2	Intrella Technologies and Services Private Limited	#103 MIG, Kamakshi Hospital Rd, Block I, Ramakrishnanagar, Mysuru, Karnataka 570023 Ph No: 090364 53696	Aim of providing Internship opportunities and Outcome based trainings for the students	01 st January 2016
3	Adamos Technologies	#128/B, 'N Kuvempu Nagara Police Station, , Mysuru, Karnataka 570023 Ph No:072044 72729	To Provide internship opportunities to the students	01 st February 2017
4	Ecclesia Advanced Computer Technology	9th Cross Rd, Vani Vilas Mohalla, Mysuru, Karnataka 570002 Ph No: 088840 18883	Aim of enhancing knowledge, skill and employability of students	01 st January 2019

Sl. No	MOU with	Address and Contact No	Purpose of MOU	Date of MOU
5	Sunyeka System Partner	#1530, A & B Block, Kuvempu Nagara, Mysuru, Karnataka 570022 Ph No:0821 419 4068	Establish mutually beneficial links with the aim of Skill development, outcome based Trainings and related services for the students	02 nd January 2019
6	Red Hat India Private Limited	4W65+MM9, Hiranandani Gardens, Powai, Mumbai, Maharashtra 400076 Ph No:02239878888	Authorised to Participate in various Red Hat Partner Programs like training and Certifications	7 th August 2020
7	Institute of Analytics	A-3, Green Inns, 104, Annai Velankenni Road, Besant Nagar, Chennai, Tamil Nadu 600090 Ph No:090478 28833	To Develop academic & educational co-operation and to participate in various certified courses on Big Data and Artificial Intelligence	1 st April 2021
8	Uniprofilers Pvt Ltd	No.383 1 st Floor, 7 th Main, Padmanabha Nagar, Bengaluru	To Conduct pre-placement interactive session and assist students to build their better resumes and Profile	3 rd March 2022
9	e2eHiring	Flat No 312, 2 nd Block, Samhita Green Woods Apartments, Thubarahalli, Bengaluru 560066	A Supportive recruitment program for students looking for placements	18 th March 2022

18 LoA and subsequent EoA till the current Academic Year



APPROVAL PROCESS 2021-22

Extension of Approval (EoA)

F.No. South-West/1-9319727312/2021/EOA

Date: 29-Jun-2021

To,

The Principal Secretary (Hr. & Tech Education)
 Govt. of Karnataka, K. G.S., 6th Floor,
 M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
 Bangalore-560001

Sub: Extension of Approval for the Academic Year 2021-22

Ref: Application of the Institution for Extension of Approval for the Academic Year 2021-22

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations, Notified on 4th February, 2020 and amended on 24th February 2021 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to:

Permanent Id	1-14177311	Application Id	1-9319727312
Name of the Institution /University	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)
Institution /University Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA , INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016	Society/Trust Address	JAYALAKSHMIPURAM, MYSORE, MYSORE, Karnataka, 570012
Institution /University Type	Private-Self Financing	Region	South-West

To conduct following Programs / Courses with the Intake indicated below for the Academic Year 2021-22

Program	Level	Course	Affiliating Body (University /Body)	Intake Approved for 2020-21	Intake Approved for 2021-22	NRI Approval Status	FN / Gulf quota/ OCI/ Approval Status
MCA	POST GRADUATE	MASTERS IN COMPUTER APPLICATIONS	Mysore University, Mysore	60	60	NA	NA

It is mandatory to comply with all the essential requirements as given in APH 2021-22 (Appendix 6)

Important Instructions

1. The State Government/ UT/ Directorate of Technical Education/ Directorate of Medical Education shall ensure that 10% of reservation for Economically Weaker Section (EWS) as per the reservation policy for admission, operational from the Academic year 2019-20 is implemented without affecting the reservation percentages of SC/ ST/ OBC/ General. However, this would not be applicable in the case of Minority Institutions referred to the Clause (1) of Article 30 of Constitution of India. Such Institution shall be permitted to increase in annual permitted strength over a maximum period of two years.
2. The Institution offering courses earlier in the Regular Shift, First Shift, Second Shift/Part Time now amalgamated as total intake shall have to fulfil all facilities such as Infrastructure, Faculty and other requirements as per the norms specified in the Approval Process Handbook 2021-22 for the Total Approved Intake. Further, the Institutions Deemed to be Universities/ Institutions having Accreditation/ Autonomy status shall have to maintain the Faculty: Student ratio as specified in the Approval Process Handbook.
3. Strict compliance of Anti-Ragging Regulation, Establishment of Committee for SC/ ST, Establishment of Internal Complaint Committee (ICC), Establishment of Online Grievance Redressal Mechanism, Barrier Free Built Environment for disabled and elderly persons, Fire and Safety Certificate should be maintained as per the provisions made in Approval Process Handbook and AICTE Regulation notified from time to time.
4. In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Prof.Rajive Kumar
Member Secretary, AICTE

Copy ** to:

1. **The Director of Technical Education**, Karnataka**
2. **The Registrar**,
Mysore University, Mysore**
3. **The Principal / Director,
SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING
Metagalli, Krs Road, Mysore
Karnataka , India
Karnataka,
Mysore,Mysore,
Karnataka,570016**
4. **The Secretary / Chairman,
JAYALAKSHMIPURAM
MYSORE,MYSORE
Karnataka,570012**
5. **The Regional Officer,
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka**
6. **Guard File(AICTE)**

Note: Validity of the Course details may be verified at <http://www.aicte-india.org/> .

** Individual Approval letter copy will not be communicated through Post/Email. However, consolidated list of Approved Institutions(bulk) will be shared through official Email Address to the concerned Authorities mentioned above.

This is a computer generated Statement. No signature Required

All India Council for Technical Education

(A Statutory body under Ministry of HRD, Govt. of India)

Nelson Mandela Marg, Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org



APPROVAL PROCESS 2019-20

Extension of Approval (EoA)

F.No. South-West/1-4261705959/2019/EOA

Date: 10-Apr-2019

To,

The Principal Secretary (Hr. & Tech Education)
Govt. of Karnataka, K. G.S., 6th Floor,
M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
Bangalore-560001

Sub: Extension of Approval for the Academic Year 2019-20

Ref: Application of the Institution for Extension of approval for the Academic Year 2019-20

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations 2018 notified by the Council vide notification number F.No.AB/AICTE/REG/2018 dated 31/12/2018 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to

Permanent Id	1-14177311	Application Id	1-4261705959
Name of the Institute	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)
Institute Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA , INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016	Society/Trust Address	JAYALAKSHMIPURAM, MYSORE, MYSORE, Karnataka, 570012
Institute Type	Unaided - Private	Region	South-West

Opted for Change from Women to Co-Ed and vice versa	No	Change from Women to Co-Ed and vice versa Approved or Not	NA
Opted for Change of Name	No	Change of Name Approved or Not	NA
Opted for Change of Site/Location	No	Change of Site/Location Approved or Not	NA
Opted for Conversion from Degree to Diploma or vice versa	No	Conversion for Degree to Diploma or vice versa Approved or Not	NA
Opted for Organization Name Change	No	Change of Organization Name Approved or Not	NA
Opted for Merger of Institution	No	Merger of Institution Approved or Not	NA
Opted for Introduction of New Program/Level	No	Introduction of Program/Level Approved or Not	NA

To conduct following Courses with the Intake indicated below for the Academic Year 2019-20

Program	Shift	Level	Course	FT/PT+	Affiliating Body (Univ/Body)	Intake Approved for 2019-20	NRI Approval Status	PIO / FN / Gulf quota/ OCI/ Approval Status
Mca	1st	POST GRADUA TE	Masters In Computer Applications	FT	Mysore University, Mysore	30	NA	NA

+FT –Full Time, PT-Part Time

In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Strict compliance of Anti-Ragging Regulation: - Approval is subject to strict compliance of provisions made in AICTE Regulation notified vide F. No. 37-3/Legal/AICTE/2009 dated July 1, 2009 for Prevention and Prohibition of Ragging in Technical Institutions. In case Institution fails to take adequate steps to Prevent Ragging or fails to act in accordance with AICTE Regulation or fails to punish perpetrators or incidents of Ragging, it will be liable to take any action as defined under clause 9(4) of the said Regulation.

It is mandatory to comply all the essential requirements as given in APH 2019-20(appendix 6)

NOTE: If the State Government / UT / DTE / DME has a reservation policy for admission in Technical Education Institutes and the same is applicable to Private & Self-financing Technical Institutions, then the State Government / UT/ DTE / DME shall ensure that 10 % of Reservation for EWS would be operational from the Academic year 2019-20 without affecting the percentage reservations of SC/ST/OBC/General . However, this would not be applicable in the case of Minority Institutions referred to the clause (1) of Article 30 of Constitution of India.

Prof. A.P Mittal
Member Secretary, AICTE

Copy to:

1. **The Director Of Technical Education**, Karnataka**
2. **The Registrar**,
Mysore University, Mysore**
3. **The Principal / Director,**
Sbr Mahajana First Grade College, Pg Wing
Metagalli, Krs Road, Mysore
Karnataka , India
Karnataka,
Mysore,Mysore,
Karnataka,570016
4. **The Secretary / Chairman,**
Mahajana Education Society(R)
Jayalakshampuram.
Mysore,Mysore,
Karnataka,570012
5. **The Regional Officer,**
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka
6. **Guard File(AICTE)**

Note: Validity of the Course details may be verified at <http://www.aicte-india.org/>

** Individual Approval letter copy will not be communicated through Post/Email. However, consolidated list of Approved Institutions(bulk) will be shared through official Email Address to the concerned Authorities mentioned above.

All India Council for Technical Education

(A Statutory body under Ministry of HRD, Govt. of India)

Nelson Mandela Marg, Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org



APPROVAL PROCESS 2018-19

Extension of Approval (EoA)

F.No. South-West/1-3514764591/2018/EOA

Date: 04-Apr-2018

To,

The Principal Secretary (Hr. & Tech Education)
Govt. of Karnataka, K. G.S., 6th Floor,
M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
Bangalore-560001

Sub: Extension of Approval for the Academic Year 2018-19

Ref: Application of the Institution for Extension of approval for the Academic Year 2018-19

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations 2016 notified by the Council vide notification number F.No.AB/AICTE/REG/2016 dated 30/11/2016 and amended on December 5, 2017 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to

Permanent Id	1-14177311	Application Id	1-3514764591
Name of the Institute	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)
Institute Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA , INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016	Society/Trust Address	JAYALAKSHMIPURAM, MYSORE, MYSORE, Karnataka, 570012
Institute Type	Unaided - Private	Region	South-West

Opted for Change from Women to Co-Ed and vice versa	No	Change from Women to Co-Ed and vice versa Approved or Not	NA
Opted for Change of Name	No	Change of Name Approved or Not	NA
Opted for Change of Site	No	Change of Site Approved or Not	NA
Opted for Conversion from Degree to Diploma or vice versa	No	Conversion for Degree to Diploma or vice versa Approved or Not	NA
Opted for Organization Name Change	No	Change of Organization Name Approved or Not	NA

To conduct following Courses with the Intake indicated below for the Academic Year 2018-19

Program	Shift	Level	Course	FT/PT+	Affiliating Body (Univ/Body)	Intake Approved for 2018-19	NRI Approval Status	PIO / FN / Gulf quota/ OCI/ Approval Status	Foreign Collaboration / Twinning Program Approval Status*
MCA	1st	POST GRADUATE	MASTERS IN COMPUTER APPLICATIONS	FT	Mysore University, Mysore	30	NA	NA	NA

+FT –Full Time, PT-Part Time

In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Strict compliance of Anti-Ragging Regulation: - Approval is subject to strict compliance of provisions made in AICTE Regulation notified vide F. No. 37-3/Legal/AICTE/2009 dated July 1, 2009 for Prevention and Prohibition of Ragging in Technical Institutions. In case Institution fails to take adequate steps to Prevent Ragging or fails to act in accordance with AICTE Regulation or fails to punish perpetrators or incidents of Ragging, it will be liable to take any action as defined under clause 9(4) of the said Regulation.

Prof. A.P Mittal
Member Secretary, AICTE

Copy to:

1. The Regional Officer,
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka
2. The Director Of Technical Education**,
Karnataka
3. The Registrar**,
Mysore University, Mysore
4. The Principal / Director,
SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING
METAGALLI, KRS ROAD, MYSORE
KARNATAKA , INDIA
KARNATAKA,
MYSORE,MYSORE,
Karnataka,570016
5. The Secretary / Chairman,
MAHAJANA EDUCATION SOCIETY(R)
JAYALAKSHMIPURAM,
MYSORE,MYSORE,
Karnataka,570012
6. Guard File(AICTE)

Note: Validity of the Course details may be verified at <http://www.aicte-india.org/>

** Individual Approval letter copy will not be communicated through Post/Email. However, consolidated list of Approved Institutions(bulk) will be shared through official Email Address to the concerned Authorities mentioned above.



All India Council for Technical Education

(A Statutory body under Ministry of HRD, Govt. of India)

Nelson Mandela Marg Vasant Kunj, New Delhi-110067

PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

F.No. South-West/1-3333535856/2017/EOA

Date: 30-Mar-2017

To,

The Principal Secretary (Hr. & Tech Education)
Govt. of Karnataka, K. G.S., 6th Floor,
M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
Bangalore-560001

Sub: Extension of approval for the academic year 2017-18

Ref: Application of the Institution for Extension of approval for the academic year 2017-18

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations 2016 notified by the Council vide notification number F.No.AB/AICTE/REG/2016 dated 30/11/2016 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to

Permanent Id	1-14177311	Application Id	1-3333535856
Name of the Institute	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Institute Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA , INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016
Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)	Society/Trust Address	JAYALAKSHMIPURAM, MYSORE, MYSORE, Karnataka a, 570012
Institute Type	Unaided - Private	Region	South-West

Opted for change from Women to Co-ed and Vice versa	No	Opted for change of name	No	Opted for change of site	No
Change from Women to Co-ed approved and Vice versa	Not Applicable	Change of name Approved	Not Applicable	Change of site Approved	Not Applicable
Opted for Conversion from degree to diploma	No	Opted for Conversion from diploma to degree	No	Conversion (degree to diploma or vice-versa) Approved	Not Applicable

To conduct following courses with the intake indicated below for the academic year 2017-18

Application Id: 1-3333535856			Course	Full/Part Time	Affiliating Body	Intake Approved for 2016-17	Intake Approved for 2017-18	NRI Approval status	PIO / FN / Gulf quota/ OCI/ Approval status	Foreign Collaboration/ Twining Program Approval status*
Program	Shift	Level								
MCA	1st Shift	POST GRADUATE	MASTERS IN COMPUTER APPLICATIONS	FULL TIME	Mysore University, Mysore	30	30	NA	NA	NA



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Nelson Mandela Marg Vasant Kunj, New Delhi-110067

PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-india.org

The above mentioned approval is subject to the condition that

SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING

shall follow and adhere to the Regulations, guidelines and directions issued by AICTE from time to time and the undertaking / affidavit given by the institution along with the application submitted by the institution on portal.

In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Strict compliance of Anti-Ragging Regulation:- Approval is subject to strict compliance of provisions made in AICTE Regulation notified vide F. No. 37-3/Legal/AICTE/2009 dated July 1, 2009 for Prevention and Prohibition of Ragging in Technical Institutions. In case Institution fails to take adequate steps to Prevent Ragging or fails to act in accordance with AICTE Regulation or fails to punish perpetrators or incidents of Ragging, it will be liable to take any action as defined under clause 9(4) of the said Regulation.

Note: Validity of the course details may be verified at www.aicte-india.org

Prof. A.P Mittal
Member Secretary, AICTE

Copy to:

- 1. The Regional Officer,**
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka
- 2. The Director Of Technical Education**,**
Karnataka
- 3. The Registrar**,**
Mysore University, Mysore
- 4. The Principal / Director,**
SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING
METAGALLI, KRS ROAD, MYSORE
KARNATAKA , INDIA
KARNATAKA,
MYSORE, MYSORE,
Karnataka, 570016
- 5. The Secretary / Chairman,**
MAHAJANA EDUCATION SOCIETY(R)
JAYALAKSHMIPURAM,
MYSORE, MYSORE,
Karnataka, 570012
- 6. Guard File(AICTE)**

Note: ** - Approval letter copy will not be communicated through post/email. However, provision is made in the portal for downloading Approval letter through Authorized login credentials allotted to concerned DTE/Registrar.



All India Council for Technical Education

(A Statutory body under Ministry of HRD, Govt. of India)

Nelson Mandela Marg Vasant Kunj, New Delhi-110067

PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org



All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

7th Floor, Chandralok Building, Janpath, New Delhi- 110 001
PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

F.No. South-West/1-2811966671/2016/EOA

Date: 05-Apr-2016

To,

The Principal Secretary (Hr. & Tech Education)
Govt. of Karnataka, K. G.S., 6th Floor,
M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
Bangalore-560001

Sub: Extension of approval for the academic year 2016-17

Ref: Application of the Institution for Extension of approval for the academic year 2016-17

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations 2012 notified by the Council vide notification number F-No.37-3/Legal/2012 dated 27/09/2012 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to

Regional Office	South-West	Application Id	1-2811966671
Name of the Institute	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Permanent Id	1-14177311
Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)	Institute Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA , INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016
Institute Type	Unaided - Private	Society/Trust Address	JAYALAKSHMIPURAM,MYSORE,MYSORE,Karnataka,570012

Opted for change from Women to Co-ed and Vice versa	No	Opted for change of name	No	Opted for change of site	No
Change from Women to Co-ed approved and Vice versa	Not Applicable	Change of name Approved	Not Applicable	Change of site Approved	Not Applicable

To conduct following courses with the intake indicated below for the academic year 2016-17

Application Id: 1-2811966671			Course	Full/Part Time	Affiliating Body	Intake 2015-16	Intake Approved for 2016-17	NRI Approval status	PIO / FN / Gulf quota Approval status	Foreign Collaboration/Twining Program Approval status*
Program	Shift	Level								
MCA	1st Shift	POST GRADUA	MASTERS IN COMPUTER APPLICATIONS	FULL TIME	Mysore University, Mysore	30	30	NA	NA	NA



All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

7th Floor, Chandralok Building, Janpath, New Delhi- 110 001
PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

		TE								
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The above mentioned approval is subject to the condition that SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING shall follow and adhere to the Regulations, guidelines and directions issued by AICTE from time to time and the undertaking / affidavit given by the institution along with the application submitted by the institution on portal.

In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Strict compliance of Anti-Ragging Regulation:- Approval is subject to strict compliance of provisions made in AICTE Regulation notified vide F. No. 37-3/Legal/AICTE/2009 dated July 1, 2009 for Prevention and Prohibition of Ragging in Technical Institutions. In case Institution fails to take adequate steps to Prevent Ragging or fails to act in accordance with AICTE Regulation or fails to punish perpetrators or incidents of Ragging, it will be liable to take any action as defined under clause 9(4) of the said Regulation.

Note: Validity of the course details may be verified at www.aicte-india.org

Dr. Avinash S Pant
Vice - Chairman, AICTE

Copy to:

- 1. The Regional Officer,**
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka
- 2. The Director Of Technical Education,**
Karnataka
- 3. The Registrar,**
Mysore University, Mysore
- 4. The Principal / Director,**
SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING
METAGALLI, KRS ROAD, MYSORE
KARNATAKA , INDIA
KARNATAKA,
MYSORE,MYSORE,
Karnataka,570016
- 5. The Secretary / Chairman,**
MAHAJANA EDUCATION SOCIETY(R)
JAYALAKSHMIPURAM,
MYSORE,MYSORE,
Karnataka,570012
- 6. Guard File(AICTE)**



All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

7th Floor, Chandralok Building, Janpath, New Delhi- 110 001
PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

F.No. South-West/1-2450667028/2015/EOA

Date: 07-Apr-2015

To,
The Principal Secretary (Hr. & Tech Education)
Govt. of Karnataka, K. G.S., 6th Floor,
M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
Bangalore-560001

Sub: Extension of approval for the academic year 2015-16

Ref: Application of the Institution for Extension of approval for the academic year 2015-16

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations 2012 notified by the Council vide notification number F-No.37-3/Legal/2012 dated 27/09/2012 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to

Regional Office	South-West	Application Id	1-2450667028
		Permanent Id	1-14177311
Name of the Institute	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Institute Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA , INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016
Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)	Society/Trust Address	JAYALAKSHMIPURAM,MYSORE,MYSORE,Karnatak a,570012
Institute Type	Unaided - Private		

Opted for change from Women to Co-ed	No	Opted for change of name	No	Opted for change of site	No
Change from Women to Co-ed approved	Not Applicable	Change of name Approved	Not Applicable	Change of site Approved	Not Applicable

To conduct following courses with the intake indicated below for the academic year 2015-16

Application Number: 1-2450667028*

Page 1 of 3

Note: This is a Computer generated Letter of Approval.No signature is required.

Letter Printed On:15 April 2015

Printed By : AE6500351



Application Id: 1-2450667028			Course	Full/Part Time	Affiliating Body	Intake 2014-15	Intake Approved for 15-16	NRI Approval status	PIO Approval status	Foreign Collaboration Approval status
Program	Shift	Level								
MCA	1st Shift	POST GRADUATE	MASTERS IN COMPUTER APPLICATIONS	FULL TIME	Mysore University, Mysore	30	30	NA	NA	NA

Note: Validity of the course details may be verified at www.aicte-india.org>departments>approvals

The above mentioned approval is subject to the condition that SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING shall follow and adhere to the Regulations, guidelines and directions issued by AICTE from time to time and the undertaking / affidavit given by the institution along with the application submitted by the institution on portal.

In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Strict compliance of Anti-Ragging Regulation:- Approval is subject to strict compliance of provisions made in AICTE Regulation notified vide F. No. 37-3/Legal/AICTE/2009 dated July 1, 2009 for Prevention and Prohibition of Ragging in Technical Institutions. In case Institution fails to take adequate steps to Prevent Ragging or fails to act in accordance with AICTE Regulation or fails to punish perpetrators or incidents of Ragging, it will be liable to take any action as defined under clause 9(4) of the said Regulation.

Dr. Avinash S Pant
Actg Chairman, AICTE

Copy to:

- The Regional Officer,**
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka
- The Director Of Technical Education,**
Karnataka
- The Registrar,**
Mysore University, Mysore
- The Principal / Director,**



All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

7th Floor, Chandralok Building, Janpath, New Delhi- 110 001
PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING
METAGALLI, KRS ROAD, MYSORE
KARNATAKA , INDIA
KARNATAKA,
MYSORE,MYSORE,
Karnataka,570016

5. **The Secretary / Chairman,**
MAHAJANA EDUCATION SOCIETY(R)
JAYALAKSHMIPURAM,
MYSORE,MYSORE,
Karnataka,570012
6. **Guard File(AICTE)**



All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

7th Floor, Chandralok Building, Janpath, New Delhi- 110 001
PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

F.No. South-West/1-2010826282/2014/EOA

Date: 04-Jun-2014

To,
The Principal Secretary (Hr. & Tech Education)
Govt. of Karnataka, K. G.S., 6th Floor,
M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
Bangalore-560001

Sub: Extension of approval for the academic year 2014-15

Ref: Application of the Institution for Extension of approval for the academic year 2014-15

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations 2012 notified by the Council vide notification number F-No.37-3/Legal/2012 dated 27/09/2012 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to

Regional Office	South-West	Application Id	1-2010826282
		Permanent Id	1-14177311
Name of the Institute	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Institute Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA , INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016
Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)	Society/Trust Address	JAYALAKSHMIPURAM,MYSORE,MYSORE,Karnatak a,570012
Institute Type	Unaided - Private		

Opted for change from Women to Co-ed	No	Opted for change of name	No	Opted for change of site	No
Change from Women to Co-ed approved	Not Applicable	Change of name Approved	Not Applicable	Change of site Approved	Not Applicable

to conduct following courses with the intake indicated below for the academic year 2014-15

Application Number: 1-2010826282*

Page 1 of 3

Note: This is a Computer generated Letter of Approval.No signature is required.

Letter Printed On:13 January 2015

Printed By : ae6500351



Application Id: 1-2010826282			Course	Full/Part Time	Affiliating Body	Intake 2013-14	Intake Approved for 14-15	NRI Approval status	PIO Approval status	Foreign Collaboration Approval status
Program	Shift	Level								
MCA	1st Shift	POST GRADUATE	MASTERS IN COMPUTER APPLICATIONS	FULL TIME	Mysore University, Mysore	30	30	NA	NA	N

- Validity of the course details may be verified at www.aicte-india.org>departments>approvals

The above mentioned approval is subject to the condition that SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING shall follow and adhere to the Regulations, guidelines and directions issued by AICTE from time to time and the undertaking / affidavit given by the institution along with the application submitted by the institution on portal and subsequently upload and update the student/ faculty/ other data on portal as per the time schedule which will be intimated by AICTE.

In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Strict compliance of Anti-Ragging Regulation:- Approval is subject to strict compliance of provisions made in AICTE Regulation notified vide F. No. 37-3/Legal/AICTE/2009 dated July 1, 2009 for Prevention and Prohibition of Ragging in Technical Institutions. In case Institution fails to take adequate steps to Prevent Ragging or fails to act in accordance with AICTE Regulation or fails to punish perpetrators or incidents of Ragging, it will be liable to take any action as defined under clause 9(4) of the said Regulation.

(Dr. Kuncheria P. Isaac)
Member Secretary, AICTE

Copy to:

1. **The Regional Officer,**
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka



All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

7th Floor, Chandralok Building, Janpath, New Delhi- 110 001
PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

2. **The Director Of Technical Education,**
Karnataka
3. **The Registrar,**
Mysore University, Mysore
4. **The Principal / Director,**
SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING
METAGALLI, KRS ROAD, MYSORE
KARNATAKA , INDIA
KARNATAKA,
MYSORE,MYSORE,
Karnataka,570016
5. **The Secretary / Chairman,**
MAHAJANA EDUCATION SOCIETY(R)
JAYALAKSHMIPURAM,
MYSORE,MYSORE,
Karnataka,570012
6. **Guard File(AICTE)**



All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

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PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

F.No. South-West/1-1346027642/2013/EOA

Date: 19-Mar-2013

To,
The Principal Secretary (Hr. & Tech Education)
Govt. of Karnataka, K. G.S., 6th Floor,
M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
Bangalore-560001

Sub: Extension of approval for the academic year 2013-14

Ref: Application of the Institution for Extension of approval for the academic year 2013-14

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations 2012 notified by the Council vide notification number F-No.37-3/Legal/2012 dated 27/09/2012 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to

Regional Office	South-West	Application Id	1-1346027642
		Permanent Id	1-14177311
Name of the Institute	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Institute Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA , INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016
Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)	Society/Trust Address	JAYALAKSHMIPURAM,MYSORE,MYSORE,Karnataka,570012
Institute Type	Unaided - Private		

Opted for change from Women to Co-ed	No	Opted for change of name	No	Opted for change of site	No
Change from Women to Co-ed approved	Not Applicable	Change of name Approved	Not Applicable	Change of site Approved	Not Applicable

to conduct following courses with the intake indicated below for the academic year 2013-14

Application Number: 1-1346027642*

Page 1 of 3

Note: This is a Computer generated Extension of Approval Letter. No signature is required.

Letter Printed On:22 March 2013.

Printed By : AE6500351



Application Id: 1-1346027642			Course	Full/Part Time	Affiliating Body	Intake 2012-13	Intake Approved for 13-14	NRI	PIO	Foreign Collaboration
Program	Shift	Level								
MCA	1st Shift	POST GRADUATE	MASTERS IN COMPUTER APPLICATIONS	FULL TIME	Mysore University, Mysore	30	30	No	No	No

- Validity of the course details may be verified at www.aicte-india.org>departments>approvals

The above mentioned approval is subject to the condition that SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING shall follow and adhere to the Regulations, guidelines and directions issued by AICTE from time to time and the undertaking / affidavit given by the institution along with the application submitted by the institution on portal.

In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Strict compliance of Anti-Ragging Regulation:- Approval is subject to strict compliance of provisions made in AICTE Regulation notified vide F. No. 37-3/Legal/AICTE/2009 dated July 1, 2009 for Prevention and Prohibition of Ragging in Technical Institutions. In case Institution fails to take adequate steps to Prevent Ragging or fails to act in accordance with AICTE Regulation or fails to punish perpetrators or incidents of Ragging, it will be liable to take any action as defined under clause 9(4) of the said Regulation.

(Dr. Kuncheria P. Isaac)

Member Secretary, AICTE

Copy to:

1. **The Regional Officer,**
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka
2. **The Director Of Technical Education,**
Karnataka
3. **The Registrar,**
Mysore University, Mysore
4. **The Principal / Director,**



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SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING
METAGALLI, KRS ROAD, MYSORE
KARNATAKA , INDIA
KARNATAKA,
MYSORE,MYSORE,
Karnataka,570016

5. **The Secretary / Chairman,**
MAHAJANA EDUCATION SOCIETY(R)
JAYALAKSHMIPURAM,
MYSORE,MYSORE,
Karnataka,570012
6. **Guard File(AICTE)**





F.No. South-West/1-697064931/2012/EOA

Date: 10/05/2012

To,
The Principal Secretary (Hr. & Tech Education)
Govt. of Karnataka, K. G.S., 6th Floor,
M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
Bangalore-560001

Sub: Extension of approval for the academic year 2012-13

Ref: Application of the Institution for Extension of approval for the academic year 2012-13

Sir/Madam,

In terms of the provisions under the All India Council for Technical Education (Grant of Approvals for Technical Institutions) Regulations 2010 notified by the Council vide notification number F-No.37-3/Legal/2010 dated 10/12/2010 and amendment vide notification number F-No.37-3/Legal/2011 dated 30/09/2011 and norms standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the approval to

Regional Office	South-West	Application Id	1-697064931
		Permanent Id	1-14177311
Name of the Institute	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Institute Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA , INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016
Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)	Society/Trust Address	JAYALAKSHMIPURAM,MYSORE,MYSORE,Karnataka a,570012
Institute Type	Unaided - Private		

Opted for change from Women to Co-ed	No	Opted for change of name	No	Opted for change of site	No
Change from Women to Co-ed approved	Not Applicable	Change of name Approved	Not Applicable	Change of site Approved	Not Applicable

to conduct following courses with the intake indicated below for the academic year 2012-13



Application Id: 1-697064931			Course	Full/Part Time	Affiliating Body	Intake 2011-12	Intake Approved for 12-13	NRI	PIO	Foreign Collaboration
Program	Shift	Level								
MCA	1st Shift	POST GRADUATE	MASTERS IN COMPUTER APPLICATIONS	FULL TIME	Mysore University	30	30	No	No	No

The above mentioned approval is subject to the condition that SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING shall follow and adhere to the Regulations, guidelines and directions issued by AICTE from time to time and the undertaking / affidavit given by the institution along with the application submitted by the institution on portal.

In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Strict compliance of Anti-Ragging Regulation:- Approval is subject to strict compliance of provisions made in AICTE Regulation notified vide F. No. 37-3/Legal/AICTE/2009 dated July 1, 2009 for Prevention and Prohibition of Ragging in Technical Institutions. In case Institution fails to take adequate steps to Prevent Ragging or fails to act in accordance with AICTE Regulation or fails to punish perpetrators or incidents of Ragging, it will be liable to take any action as defined under clause 9(4) of the said Regulation.

(Dr. K P Isaac)

Member Secretary, AICTE

Copy to:

- The Regional Officer,**
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka
- The Director Of Technical Education,**
Karnataka
- The Registrar,**
Mysore University
- The Principal / Director,**
SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING
METAGALLI, KRS ROAD, MYSORE
KARNATAKA , INDIA



All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

7th Floor, Chandralok Building, Janpath, New Delhi- 110 001
PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

- KARNATAKA,
MYSORE,MYSORE,
Karnataka,570016
5. **The Secretary / Chairman,**
MAHAJANA EDUCATION SOCIETY(R)
JAYALAKSHMIPURAM,
MYSORE,MYSORE,
Karnataka,570012
6. **Guard File(AICTE)**





All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

7th Floor, Chandralok Building, Janpath, New Delhi- 110 001
PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724182 www.aicte India.org

F.No. South-West/1-422491979/2011/EOA

Date: 01-09-2011

To
Principal Secretary (Hr. & Tech Education)
Govt. of Karnataka, K. G.S., 6th Floor,
J.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,
Bangalore-560001

Sub: Extension of approval for the academic year 2011-12.
Ref: Application of the Institution for Extension of Approval for the Year 2011-12

Madam,

In terms of the Regulations notified by the Council vide F.No. 37-3/Legal/2011 dated 10/12/2010 and norms, standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the extension of approval of the Council to

Regional Office	South-West	Application Id	1-422491979
		Permanent Id	1-14177311
Name of the Institute	SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING	Institute Address	METAGALLI, KRS ROAD, MYSORE KARNATAKA, INDIA KARNATAKA, MYSORE, MYSORE, Karnataka, 570016
Name of the Society/Trust	MAHAJANA EDUCATION SOCIETY(R)	Society/Trust Address	JAYALAKSHMIPURAM, MYSORE, MYSORE, Karnataka a.570012
Institute Type	Unaided - Private		

to conduct following courses with the intake indicated below for the academic year 2011-12

Application Id: 1-422491979			Course	Affiliating Body	Intake 2010-11	NRI	PIO	Foreign Collaboration	
Program	Shift	Level	Full/Part Time			Intake Approved for 11-12			
MCA	1st Shift	POST GRAD. UATE	MASTERS IN COMPUTER APPLICATIONS	Mysore University	30	30	No	No	No

The above mentioned approval is subject to the condition that SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING shall follow and adhere to the Regulations, guidelines and directions issued by AICTE from time to time and the undertaking / affidavit given by the institution along with the application submitted by the institution on portal.

In case of any differences in content in this Computer generated Extension of Approval Letter, the content/information as approved by the Executive Council / General Council as available on the record of AICTE shall be final and binding.

Strict compliance of Anti-Ragging Regulation- Approval is subject to strict compliance of provisions made in AICTE Regulation notified vide F. No. 37-3/Legal/AICTE/2009 dated July 1, 2009 for Prevention and Prohibition of Ragging in Technical Institutions. In

Application Number : 1-422491979

Page 1 of 2

Note: This is a Computer generated Extension of Approval Letter. No signature is required.

Date of printing: 02-09-2011

To, Director Sir,
SRJ 29/9/2011



All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)

7th Floor, Chandralok Building, Janpath, New Delhi- 110 001
PHONE: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-India.org

case Institution fails to take adequate steps to Prevent Ragging or fails to act in accordance with AICTE Regulation or fails to punish perpetrators or incidents of Ragging, it will be liable to take any action as defined under clause 9(4) of the said Regulation.

(Dr. K P Isaac)

Member Secretary, AICTE

Copy to:

1. **The Regional Officer,**
All India Council for Technical Education
Health Centre Building
Bangalore University Campus
Bangalore - 560 009, Karnataka
2. **The Director Of Technical Education,**
Karnataka
3. **The Registrar,**
Mysore University
4. **The Principal / Director,**
SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING
METAGALLI, KRS ROAD, MYSORE
KARNATAKA , INDIA
KARNATAKA,
MYSORE,MYSORE,
Karnataka,570016
5. **The Secretary / Chairman,**
MAHAJANA EDUCATION SOCIETY(R)
JAYALAKSHMIPURAM,
MYSORE,MYSORE,
Karnataka,570012
6. **Guard File(AICTE)**



All India Council for Technical Education
(A Statutory Body under Ministry of HRD, Govt of India)

7th floor, Chandralok Building, Janpath, New Delhi 110 001
Phone : 11 23724151-57 FAX : 11 23724183 www.aicte-india.org

No. : South-West Region/1-14177311/2010/EOA

August 23, 2010

To,
Principal Secretary (Hr. & Tech Education) Govt. of Karnataka, K. G.S.,
6th Floor, M.S. Building, R. N. 645, Dr. B. R. Ambedkar Road,

Sub. : Extension of approval for the academic year 2010-11.

Sir,

In terms of the Regulations notified by the Council vide F. No. 37-3/Legal/2010 and norms, standards, procedures and conditions prescribed by the Council from time to time, I am directed to convey the extension of approval of the Council to :

SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING, SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING, METAGALLI, KRS ROAD, MYSOREKARNATAKA, INDIAKARNATAKA, MYSORE, KARNATAKA, PIN : 570016

for conduct of the following courses with the intake indicated below in the academic year 2010-11:

Sr. No.	Program	Level	Shift	Course	Intake 2009-10	Intake 2010-11
1	MCA	PG	First Shift	MASTER IN COMPUTER APPLICATION	90	90

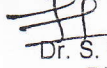
The above mentioned approval is subject to the condition that :

SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING, SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING, METAGALLI, KRS ROAD, MYSOREKARNATAKA, INDIAKARNATAKA, MYSORE, KARNATAKA, PIN : 570016

shall follow and adhere to the regulations, guidelines and directions issued by AICTE from time to time and the undertaking / affidavit given by the institution along with the application submitted by the institution on portal and hard copy to Regional Office.

Anti Ragging :- The approval is subject to the institutions strictly complying with all the provisions made under the Anti ragging regulation notified by council vide F.No. 37/Legal/AICTE/2009 dated 1-7-2009 failing which, it will be liable to any action defined under clause 9(4) of this regulation.

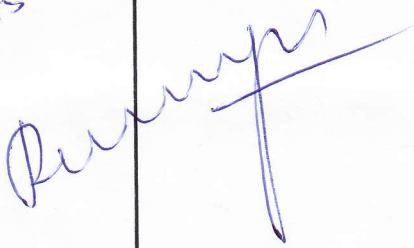
Yours faithfully,


Dr. S. G. Bhirud
Director

- Copy to :
1. The Regional Office, South-West Region, Karnataka
 2. The Director of Technical Education, Govt. of Delhi.
 3. Guard File (AICTE)
 4. The Registrar, Affiliating University
 5. The Principal / Director,
SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING, SBRR MAHAJANA FIRST GRADE COLLEGE, PG WING, METAGALLI, KRS ROAD,
MYSOREKARNATAKA, INDIAKARNATAKA, MYSORE, KARNATAKA, PIN : 570016

Regional Officer
South Western Regional Office
All India Council for Technical Education
Bangalore-9.



TO
Mrs. Subodha


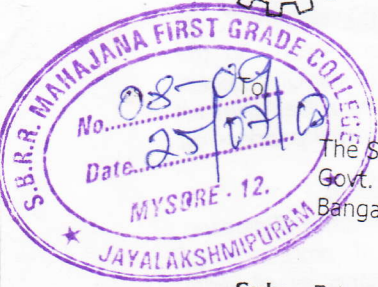


अखिल भारतीय तकनीकी शिक्षा परिषद् ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

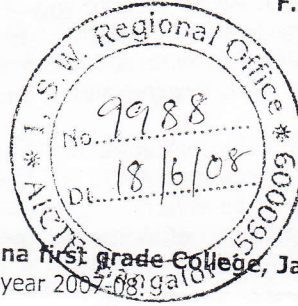
(भारत सरकार का सांविधिक निकाय) (A statutory body of the Govt. of India)

F.No. 411/KA-031/ET-MCA/99

Dated: 23/05/2008



The Secretary Education Dept.,
Govt. of Karnataka, M.S. Building,
Bangalore - 560001 (Karnataka)



Sub: Extension of approval to SBRR Mahajana first grade College, Jayalakshmipuram, MYSORE-570012 Mysore, beyond the academic year 2007-08.

Sir,

As per the Regulations notified by the Council vide F.No. 37-3/Legal/2004 dated 14th Sept 2006 and norms, standards, procedures and conditions prescribed by the Council from time to time and based on the recommendations of the Appraisal Committee/ Expert Committee, I am directed to convey the extension of approval of the Council to SBRR Mahajana first grade College, Jayalakshmipuram, MYSORE-570012 Mysore, for conduct of the following courses with the intake indicated below:-

S.No	Name of the Course(s)	Existing Intake	Revised Intake	Period of approval
1	MCA -FT	30	30	2008-09*
	Total=	30	30	
		30	30	

* The Compliance Report along with requisite processing fee is required to be submitted every year by 31st August irrespective of the period of approval.

The above approval is subject to rectification of following observations/deficiencies/ specific conditions by 31st August 2008.

Faculty

- > The Director is not qualified as per AICTE norms.
- > Eligible Director should be appointed before 30th June 2008

Built Up Area

- > NIL

Computers

- > NIL

Others

- > Library books shortfall by 1249 numbers (40.29 %)
- > Journals shortfall by 7 numbers (58.33 %)

Note: The mandatory disclosure in prescribed format if not hosted on the website should be hosted by 31st May, 2008, failing which action would be initiated as per the rules and regulations of the AICTE including No Admission / Withdrawal of approval.

Director, Mysore

Principal
25/07/08

[Handwritten signature]

copy received
on 26/7/08

The institution is required to submit 2 copies of the Compliance Report, indicating the rectification of deficiencies along with mandatory disclosure and details of faculty recruited for each course in the prescribed format (available at AICTE Website www.aicte.ernet.in) to the concerned Regional Office latest by 31st August 2008 for consideration of approval beyond the session 2008-09. ***It may be noted that all the institutions are required to submit the Compliance Report along with requisite processing fee by 31st August, every year, irrespective of the period of approval.***

The Compliance Report must be accompanied with a processing fee of Rs. 40,000/- in the form of demand draft in the favor of Member Secretary, AICTE, payable at New Delhi. In the absence of processing fee the Compliance Report will not be entertained. Following the Compliance report, the Council would verify the status in respect of rectification of deficiencies through surprise random inspection without any prior notice.

The approval is further subject to fulfillment of following general conditions

- 1 That the management shall provide adequate funds for development of land and for providing related infrastructural, instructional and other facilities as per norms and standards laid down by the Council from time to time and for meeting recurring expenditure.
2. (a) That the admission shall be made only after adequate infrastructure and all other facilities are provided as per norms and guidelines of the AICTE.
(b) That the admissions shall be made in accordance with the regulations notified by the Council from time to time.
(c) That the curriculum of the course, the procedure for evaluation/ assessment of students shall be in accordance with the norms prescribed by the AICTE.
(d) That the Institution shall not allow closure of the Institution or discontinuation of the course(s) or start any new course(s) or alter intake capacity of seats without the prior approval of the Council.
(e) That no excess admission shall be made by the Institution over and above the approved intake under any circumstances. In case any excess admission is reported to the Council, appropriate penal action including withdrawal of approval shall be initiated against the Institution
(f) That the institutions shall not have any collaborative arrangements with any Indian and/ or Foreign Universities for conduct of technical courses other than those approved by AICTE without obtaining prior approval from AICTE. In case any violation is reported to the Council, appropriate penal action including withdrawal of approval shall be initiated against the Institution
(g) That the Institution shall not conduct any course(s) in the field of technical education in the same premises/ campus and / or in the name of the Institution without prior permission/ approval of AICTE. In case any violation is reported to the Council, appropriate penal action including withdrawal of approval shall be initiated against the Institution
(h) The institution shall not conduct any non-technical course(s) in the same premises/ campus under any circumstances. In case any violation is reported to the Council, appropriate penal action including withdrawal of approval shall be initiated against the Institution
- 3 That the institution shall operate only from the approved location, and that the institution shall not open any off campus study centers/ extension centers directly or in collaboration with any other institution/ university/ organization for the purpose of imparting technical education without obtaining prior approval from the AICTE.



- 4 That the tuition and other fees shall be charged as prescribed by the Competent Authority within the overall criteria prescribed by the Council from time to time. No capitation fee shall be charged from the students/ guardians of students in any form.
- 5 That the accounts of the Institution shall be audited annually by a certified Chartered Accountant and shall be open for inspection by the Council or any body or persons authorized by it.
- 6 That the Director/ Principal and the teaching and other staff shall be selected according to procedures, qualifications and experience prescribed by the Council from time to time and pay scales are as per the norms prescribed by the Council from time to time.
- 7 (a) That the institution shall furnish requisite returns and reports as desired by AICTE in order to ensure proper maintenance of administrative and academic standards.
(b) That the technical institution shall publish an information booklet before commencement of the academic year giving details regarding the institution and courses/ programmes being conducted and details of infrastructural facilities including faculty etc. in the form of mandatory disclosure. The information booklet may be made available to the stakeholders of the technical education on cost basis. The mandatory disclosure information shall be put on the Institution Website. The information shall be revised every year with updated information about all aspects of the institution.
(c) That it shall be mandatory for the technical institution to maintain a Website providing the prescribed information. The Website information must be continuously updated as and when changes take place.
(d) That a compliance report in the prescribed format along with mandatory disclosures on fulfillment of the above conditions, shall be submitted each year by the Institution within the time limit prescribed by the Council from time to time **i.e. 31st August 2008 for the current year.**
(e) That if Technical Institution fails to disclose the information or suppress and/ or misrepresent the information, appropriate action could be initiated including withdrawal of AICTE approval.
- 8 That all the laboratories, workshops etc. shall be equipped as per the syllabi of the concerned affiliated University and shall be in operational condition before making admissions.
- 9 That a library shall be established with adequate number of titles, books, journals (both Indian & Foreign) etc as per AICTE norms.
- 10 That a computer center with adequate number of terminals, Printers etc. shall be established as per AICTE norms.
- 11 AICTE may carry out random inspections round the year for verifying the status of the Institutions to ensure maintenance of norms and standards.
- 12 That the AICTE may also conduct inspections with or without notifying the dates to verify specific complaints of misrepresentation, violation of norms and standards, mal-practices etc.
- 13 That the Institution by virtue of the approval given by Council shall not automatically become claimant to any grant-in-aid from the Central or State Government.


14. That in the event of a student / candidate withdrawing before the starting of the course, the wait listed candidates should be given admission against the vacant seat. The entire fee collected from the student, after a deduction of the processing fee of not more than Rs. 1000/- (Rupees One thousand only) shall be refunded and returned by the Institution / University to the student/candidate withdrawing from the programme. It would not be permissible for Institutions and Universities to retain the School/Institution Leaving Certificates in original to force retention of admitted students (See Public Notice AICTE/DPG/03(01)/2008).
15. "That the institution shall take appropriate measures for prevention of ragging in any form, in the light of directions of Supreme Court of India in Writ Petition No. (C) 656 / 1998. In case of failure to prevent the instances of ragging by the institutions, the Council shall take appropriate action including withdrawal of approval".
16. That the Management shall strictly follow further conditions as may be specified/notified by the Council through various notifications in media including AICTE official website (www.aicte.ernet.in), from time to time.
17. In the event of non-compliance by the **SBRR Mahajana first grade College, Jayalakshmipuram, MYSORE-570012 Mysore**, with regard to guidelines, norms and conditions prescribed from time to time the Council shall be free to take measures for withdrawal of its approval or recognition, without consideration of any related issues and that all liabilities arising out of such withdrawal would solely be that of **SBRR Mahajana first grade College, Jayalakshmipuram, MYSORE-570012 Mysore**.

Yours faithfully,


Prof. H.C. Rai
Advisor (E&T) & (M&T)

Copy to:

- 1 The Director of Technical Education, Govt. of Karnataka, Palace Road, Bangalore - 560 001
- 2 **The Director
SBRR Mahajana first grade College,
Jayalakshmipuram, MYSORE-570012
Mysore**
- 3 The Regional Officer,
South-West Regional Office, AICTE, Health Centre,
Building, Bangalore University Campus,
Bangalore - 560 009, Karnataka
- 4 The Registrar - Mysore University "Crawford Hall", Mysore - 570 005
(He is requested to complete the process of affiliation for facilitating admissions.)
- 5 Guard File (AICTE)





अखिल भारतीय तकनीकी शिक्षा परिषद्
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(भारत सरकार का एक सांविधिक निकाय) (A STATUTORY BODY OF THE GOVT. OF INDIA)

F.No. 411/KA-031/ET-MCA/99

Date: May 11, 2007

To,

The Secretary Education Dept.,
Govt. of Karnataka, M.S. Building,
Dr. B.R. Ambedkar Veedhi,
Bangalore – 560 001, Karnataka

Sub: Extension of approval to SBRR Mahajana first grade College,, Jayalakshmpuram, MYSORE-570012, Mysore for the academic year 2007-08.

Sir,

As per the Regulations notified by the Council vide F.No. 37-3/Legal/2004 dated 14th Sept 2006 and Norms, Standards, Procedures and Conditions prescribed by the Council from time to time and based on the recommendations of Appraisal Committee / Expert Committee, I am directed to convey the extension of approval of the Council to **SBRR Mahajana first grade College,, Jayalakshmpuram, MYSORE-570012, Mysore** for conduct of the following courses with the intake indicated below:

Name of the Course(s)	Existing Intake	Revised Intake	Period of approval
MCA-FT.	30	30	2007-2008

The above approval is subject to rectification of the following observations / deficiencies / specific conditions by 31st August 2007.

Faculty:

- Eligible Director/Principal is not qualified as per AICTE norms.
- Eligible Director/Principal may be appointed before 30.06.2007.
- There is a shortfall of faculty by 30 Nos.
- Sr. level faculty in cadre ratio as per AICTE norms should be appointed.
- AICTE pay scale is not implemented to all the faculty and staff.

Built-up Area:

- Nil

Others:

- No of Journals is short 66% (Req:12, Avail: 4, Shortfall: 8)

Handwritten signature in green ink.

Stamp: Principal, SBRR Mahajana first grade College, Jayalakshmpuram, MYSORE-570012

Stamp: Education Society, Graduate Centre, No. 33, Date 30/5/07

Handwritten note: to MCA file

Handwritten signature in blue ink.

Stamp: DIRECTOR

Contd. 2/-

- 4 That the tuition and other fees shall be charged as prescribed by the Competent Authority within the overall criteria prescribed by the Council from time to time. No capitation fee shall be charged from the students/ guardians of students in any form.
- 5 That the accounts of the Institution shall be audited annually by a certified Chartered Accountant and shall be open for inspection by the Council or any body or persons authorized by it.
- 6 That the Director/ Principal and the teaching and other staff shall be selected according to procedures, qualifications and experience prescribed by the Council from time to time and pay scales are as per the norms prescribed by the Council from time to time.
- 7
 - (a) That the institution shall furnish requisite returns and reports as desired by AICTE in order to ensure proper maintenance of administrative and academic standards.
 - (b) That the technical institution shall publish an information booklet before commencement of the academic year giving details regarding the institution and courses/ programmes being conducted and details of infrastructural facilities including faculty etc. in the form of mandatory disclosure. The information booklet may be made available to the stakeholders of the technical education on cost basis. The mandatory disclosure information shall be put on the Institution Website. The information shall be revised every year with updated information about all aspects of the institution.
 - (c) That it shall be mandatory for the technical institution to maintain a Website providing the prescribed information. The Website information must be continuously updated as and when changes take place.
 - (d) That a compliance report in the prescribed format along with mandatory disclosures on fulfillment of the above conditions, shall be submitted each year by the Institution within the time limit prescribed by the Council from time to time i.e. 31st August 2007 for the current year.
 - (e) That if Technical Institution fails to disclose the information or suppress and/ or misrepresent the information, appropriate action could be initiated including withdrawal of AICTE approval.
- 8 That all the laboratories, workshops etc. shall be equipped as per the syllabi of the concerned affiliated University and shall be in operational condition before making admissions.
- 9 That a library shall be established with adequate number of titles, books, journals (both Indian & Foreign) etc as per AICTE norms.
- 10 That a computer center with adequate number of terminals, Printers etc. shall be established as per AICTE norms.
- 11 AICTE may carry out random inspections round the year for verifying the status of the Institutions to ensure maintenance of norms and standards.
- 12 That the AICTE may also conduct inspections with or without notifying the dates to verify specific complaints of mis-representation, violation of norms and standards, mal-practices etc.
- 13 That the Institution by virtue of the approval given by Council shall not automatically become claimant to any grant-in-aid from the Central or State Government.
- 14 That the Management shall strictly follow further conditions as may be specified by the Council from time to time.

- 15 In the event of non-compliance by the **SBRR Mahajana first grade College,, Jayalakshmpuram, MYSORE-570012, Mysore** with regard to guidelines, norms and conditions prescribed from time to time the Council shall be free to take measures for withdrawal of its approval or recognition, without consideration of any related issues and that all liabilities arising out of such withdrawal would solely be that of **SBRR Mahajana first grade College,, Jayalakshmpuram, MYSORE-570012, Mysore**.

Yours faithfully,


Prof. K. Madhu Murthy
Adviser- (M&T)

Copy to:

- 1 **The Director/Principal**
SBRR Mahajana first grade College,
Jayalakshmpuram, MYSORE-570012
Mysore
- 2 **The Regional Officer,**
AICTE, Southwest Regional Office
Bangalore University Campus, P.K. Block, Palace Road,
Bangalore – 560009
- 3 **The Registrar,**
Mysore University
"Crawford Hall", Mysore - 570 005
(He is requested to complete the process of affiliation for facilitating admissions).
- 4 The Director,
Directorate of Technical Education,
Govt. of Karnataka, Palace Road,
Bangalore-560 001
5. Guard File (AICTE)



अखिल भारतीय तकनीकी शिक्षा परिषद्
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(भारत सरकार का एक सांविधिक निकाय) (A STATUTORY BODY OF THE GOVT. OF INDIA)

F.No. 411/KA-031/ET-MCA/99
Date: 15/05/2006

To,

The Secretary Education Dept.,
Govt. of Karnataka, M.S. Building,
Bangalore - 560001 (Karnataka)

Sub: Extension of approval to SBRR Mahajana first grade College, Jayalakshmpuram, MYSORE-570012 Mysore for the academic year 2006-07.

Sir,

As per the Regulations notified by the Council vide F.No. 37-3/Legal/2004 dated 28th November 2005 and norms, standards, procedures and conditions prescribed by the Council from time to time and based on the recommendations of Appraisal Committee / Expert Committee, I am directed to convey the extension of approval of the Council to SBRR Mahajana first grade College, Jayalakshmpuram, MYSORE-570012 Mysore for conduct of the following courses with the intake indicated below:

Name of the Course(s)	Existing Intake	Revised Intake	Period of approval
MCA	30	30	2006-2007

The above approval is subject to rectification of the following observations / deficiencies / specific conditions by 31st August 2006.

Course (s)	Number of Faculty required	Number of Faculty available	Shortfall in Faculty	
MCA	08	05	03	37.5%

- ❖ Sr. level faculty in cadre ratio as per AICTE norms should be appointed.
- ❖ AICTE Pay scales is not implemented to all the faculty and staff.
- ❖ The Director is not qualified as per AICTE norms.

➤ Built up area :

- ❖ There is a shortfall of 195.05 sq. mt. in the built up area as only 794.95 sq. mt. is available against a requirement of 990 sq.mt. (deficiency 19.7% %).

➤ Computer Facility :

- ❖ There is a shortfall of 05 computers as only 50 are available against a requirement of 55 computers.

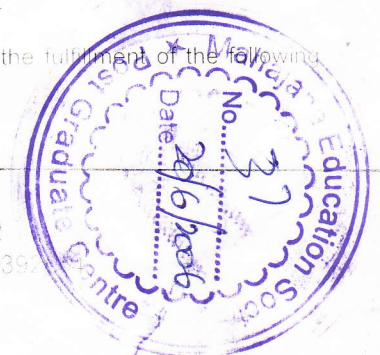
Note: The mandatory disclosure in prescribed format if not hosted on the website should be hosted by 31st May, 2006, failing which action would be initiated as per the rules and regulations of the AICTE including No Admission / Withdrawal of approval.

The institution is required to submit two copies of the Compliance Report, indicating the rectification of deficiencies along with mandatory disclosure and details of faculty recruited for each course in the prescribed format (available at AICTE Website www.aicteernet.in) to the concerned Regional Office latest by 31st August 2006 for consideration of approval beyond the session 2006-07.

*The Compliance Report must be accompanied with a processing fee of Rs. 40,000/- in the form of demand draft in the favour of Member Secretary, AICTE, payable at New Delhi. In the absence of processing fee the Compliance Report will not be entertained. Following the Compliance report, the Council would verify the status in respect of rectification of deficiencies through surprise random inspection without any prior notice.

The above approval if granted after rectification of deficiencies would be subject to the fulfillment of the following general conditions

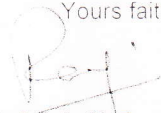
इंदिरा गांधी खेल मंडल, इन्द्रप्रस्थ एस्टेट, नए दिल्ली - 110002
Indira Gandhi Sports Complex, I. P. Estate, New Delhi-110 002
दूरभाष / Phone : 23392500, 63-65-68, 71, 73-75, फैक्स / Fax : 011-23392500
वेबसाइट / Website : www.aicteernet.in



- 1 That the management shall provide adequate funds for development of land and for providing related infrastructural, instructional and other facilities as per norms and standards laid down by the Council from time to time and for meeting recurring expenditure.
- 2 (a) That the admission shall be made only after adequate infrastructure and all other facilities are provided as per norms and guidelines of the AICTE.
(b) That the admissions shall be made in accordance with the regulations notified by the Council from time to time.
(c) That the curriculum of the course, the procedure for evaluation/ assessment of students shall be in accordance with the norms prescribed by the AICTE.
(d) That the Institution shall not allow closure of the Institution or discontinuation of the course(s) or start any new course(s) or alter intake capacity of seats without the prior approval of the Council.
(e) That no excess admission shall be made by the Institution over and above the approved intake under any circumstances. In case any excess admission is reported to the Council, appropriate penal action including withdrawal of approval shall be initiated against the Institution
(f) That the institutions shall not have any collaborative arrangements with any Indian and/ or Foreign Universities for conduct of technical courses other than those approved by AICTE without obtaining prior approval from AICTE. In case any violation is reported to the Council, appropriate penal action including withdrawal of approval shall be initiated against the Institution
(g) That the Institution shall not conduct any course(s) in the field of technical education in the same premises/ campus and / or in the name of the Institution without prior permission/ approval of AICTE. In case any violation is reported to the Council, appropriate penal action including withdrawal of approval shall be initiated against the Institution
(h) The institution shall not conduct any non-technical course(s) in the same premises/ campus under any circumstances. In case any violation is reported to the Council, appropriate penal action including withdrawal of approval shall be initiated against the Institution
- 3 That the institution shall operate only from the approved location, and that the institution shall not open any off campus study centers/ extension centers directly or in collaboration with any other institution/ university/ organization for the purpose of imparting technical education without obtaining prior approval from the AICTE.
- 4 That the tuition and other fees shall be charged as prescribed by the Competent Authority within the overall criteria prescribed by the Council from time to time. No capitation fee shall be charged from the students/ guardians of students in any form.
- 5 That the accounts of the Institution shall be audited annually by a certified Chartered Accountant and shall be open for inspection by the Council or any body or persons authorized by it.
- 6 That the Director/ Principal and the teaching and other staff shall be selected according to procedures, qualifications and experience prescribed by the Council from time to time and pay scales are as per the norms prescribed by the Council from time to time.
- 7 (a) That the institution shall furnish requisite returns and reports as desired by AICTE in order to ensure proper maintenance of administrative and academic standards
(b) That the technical institution shall publish an information booklet before commencement of the academic year giving details regarding the institution and courses/ programmes being conducted and details of infrastructural facilities including faculty etc. in the form of mandatory disclosure. The information booklet may be made available to the stakeholders of the technical education on cost basis. The mandatory disclosure information shall be put on the Institution Website. The information shall be revised every year with updated information about all aspects of the institution.
(c) That it shall be mandatory for the technical institution to maintain a Website providing the prescribed information. The Website information must be continuously updated as and when changes take place.

- (d) That a compliance report in the prescribed format along with mandatory disclosures on fulfillment of the above conditions, shall be submitted each year by the Institution within the time limit prescribed by the Council from time to time i.e. 31st August 2006 for the current year.
- (e) That if Technical Institution fails to disclose the information or suppress and/ or misrepresent the information, appropriate action could be initiated including withdrawal of AICTE approval.
- 8 That all the laboratories, workshops etc. shall be equipped as per the syllabi of the concerned affiliated University and shall be in operational condition before making admissions.
- 9 That a library shall be established with adequate number of titles, books, journals (both Indian & Foreign) etc as per AICTE norms.
- 10 That a computer center with adequate number of terminals, Printers etc. shall be established as per AICTE norms.
- 11 AICTE may carry out random inspections round the year for verifying the status of the Institutions to ensure maintenance of norms and standards.
- 12 That the AICTE may also conduct inspections with or without notifying the dates to verify specific complaints of mis-representation, violation of norms and standards, mal-practices etc.
- 13 That the Institution by virtue of the approval given by Council shall not automatically become claimant to any grant-in-aid from the Central or State Government.
- 14 That the Management shall strictly follow further conditions as may be specified by the Council from time to time.
- 15 In the event of non-compliance by the **SBRR Mahajana first grade College, Jayalakshmpuram, MYSORE-570012 Mysore** with regard to guidelines, norms and conditions prescribed from time to time the Council shall be free to take measures for withdrawal of its approval or recognition without consideration of any related issues and that all liabilities arising out of such withdrawal would solely be that of **SBRR Mahajana first grade College, Jayalakshmpuram, MYSORE-570012 Mysore**.

Yours faithfully


Dr. Rajnish Shrivastava
Adviser- UG/PG(M&T)

Copy to:

- 1 The Principal,
SBRR Mahajana first grade College,
Jayalakshmpuram, MYSORE-570012
Mysore
- 2 The Regional Officer,
AICTE, South-west Regional Office,
Bangalore University Campus, P.K. Block, Palace Road
Bangalore - 560009
- 3 The Director of Technical Education,
Govt. of Karnataka, Palace Road,
Bangalore - 560 001
- 4 The Registrar,
Mysore University,
"Crawford Hall", Mysore - 570 005
(He is requested to complete the process of affiliation for facilitating admissions)
- 5 Guard File (UG/PG).





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③ 14

अखिल भारतीय तकनीकी शिक्षा परिषद्
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(भारत सरकार का एक सांविधिक निकाय) (A STATUTORY BODY OF THE GOVERNMENT OF INDIA) 2005

411/KA-031/ET-MCA/99

To,
The Secretary Education Department
Govt. of Karnataka,
M.S. Building, Dr. B.R. Ambedkar Veedhi,
Bangalore-560 001, Karnataka

Sub: Extension of approval to SBRR MAHAJANA FIRST GRADE COLLEGE, ,
JAYALAKSHMIPURAM, , MYSORE-570 012 , , , for the year 2005-06-reg.

Sir,

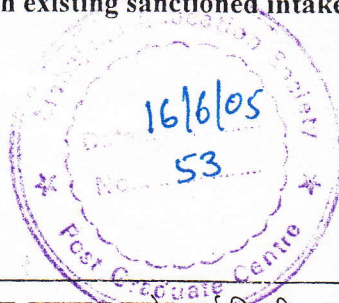
As you are aware, All India Council for Technical Education has been mandated under the AICTE Act, 1987 to ensure **maintenance of norms and standards** with regard to technical education in the country. In exercise of this mandate, the Council insists on fulfillment of the minimum requirements prescribed for imparting technical education by the institution so that **quality** is not compromised and stakeholders are satisfied. The Council also undertakes an **annual Inspection** of the institutions and conveys deficiencies to them for **rectification**.

It has been observed however that notwithstanding the Council's **repeated advice** to comply with minimum norms and standards, many institutions continue to be **complacent** about taking steps to remedy the deficiencies. Such institutions suffer from **critical deficiencies** of faculty and other requirements. Feedback of students with regard to quality of education imparted by such institutions has evoked grave concern. The Expert Committees, following **holistic appraisal** during inspections, have also pointed out severe shortcomings in key areas.

Your institution has several deficiencies, which are listed in **Annexure-A** for your perusal. These deficiencies have rendered the institution liable for strict punitive action. However, the Council has decided to take a lenient view and put only the course(s) which suffer from the most critical deficiency i.e. **shortage of faculty** in the reduced intake category. The approved course(s) along with recommended intake for the year 2005-06 in respect **SBRR MAHAJANA FIRST GRADE COLLEGE, , JAYALAKSHMIPURAM, , MYSORE-570 012 , , ,** is as under:-

COURSE	APPROVED INTAKE	APPROVED INTAKE
	2004-05	2005-06
MCA (FT)	40	30

Note:- Additional intake / new courses / PIO quota not granted on account of deficiencies in running of existing courses with existing sanctioned intake (wherever applicable).



Ranjana
JIB
15/6/05

The Council is committed to facilitating the institutions to come up to the expectations of the stakeholders through rectification of deficiencies. It has therefore been decided by the Council to give yet another opportunity to **rectify** at least the deficiency of faculty irrespective of the cadre ratio for consideration of restoration of UG course(s) in Engineering & Technology / Pharmacy / MBA and MCA. However, for restoration of intake at PG level in Engineering &

Technology and Pharmacy, a minimum of one faculty with Ph.D. qualification and two with postgraduate qualifications in the respective discipline would be essential.

In case the institution is able to recruit the required faculty for individual course and intimate the Council regarding the same in the **enclosed Proforma** (a copy to be sent to concerned Regional Office) latest by 7th July, 2005, the Council would favorably consider proportionately restoring intake in course(s) where it has been reduced as soon as the appeal is received by the Council

Please note that the Council may independently verify the factual status in respect of recruitment of faculty. The institution shall be liable for strict action including action under the relevant provisions of Indian Penal Code in case false information is furnished to the Council on recruitment of faculty.

It may also be noted that relaxation in respect of rectification of deficiencies in terms of faculty is applicable only for the purpose of **restoration of intake** for the academic year 2005-06. All other deficiencies including appointment of faculty have to be complied with by 31/08/2005 for extension of approval for the year 2006-07.

A compliance report indicating rectification of **all the deficiencies** including details of faculty recruited for each course must be received by the Council latest by 31st August, 2005 to entitle your institution for extension of approval for the year 2006-07. The compliance report must be accompanied with a visiting/processing fee as prescribed by the Council in the form of a demand draft in favour of Member Secretary, AICTE payable at New Delhi. In the absence of the processing / visiting fee, the compliance report may not be entertained.


Following the compliance report, the Council would verify the status in respect of rectification of deficiencies through physical inspection without any prior intimation. The institution should therefore be prepared for random inspection without any prior notice. Extension of approval for the year 2006-07 shall be dependent on the compliance report and the outcome of the surprise inspection.

Enclosure:- Annexure-A

Yours faithfully



(Dr. P. Venkateswara Rao)
Adviser (UG/ PG)





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14

अखिल भारतीय तकनीकी शिक्षा परिषद्
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(भारत सरकार का एक सांविधिक निकाय) (A STATUTORY BODY OF THE GOVT. OF INDIA)

F. No : 411/KA-031/ET-MCA/99

Date : 14-05-2004

To,
The Secretary Education Dept.
Govt. of Karnataka,
M.S. Building,
Bangalore - 560 001
Karnataka

Subject: Extension of approval of AICTE to SBRR MAHAJANA FIRST GRADE COLLEGE, JAYALAKSHMIPURAM, MYSORE-570 012, for the academic year 2004-2005.

Sir / Madam,

The Application / Proposal and / or the Compliance Report Received from **SBRR MAHAJANA FIRST GRADE COLLEGE, JAYALAKSHMIPURAM,, MYSORE-570 012**, has been processed as per laid down procedure, guidelines, policy and / or norms and standards of AICTE, mentioned in AICTE Regulations and / or "AICTE Hand Book for Approval Process".

I am directed to state that the All India Council for Technical Education (AICTE) is pleased to accord approval to **SBRR MAHAJANA FIRST GRADE COLLEGE, JAYALAKSHMIPURAM, MYSORE-570 012**, for extension of AICTE Approval for Variation in intake (Increase / Decrease), as applicable, for Post Graduate course with Annual Intake and period of approval as given below: -

COURSE	EXISTING ANNUAL INTAKE	REVISED APPROVED INTAKE	PERIOD OF APPROVAL
MCA (FT)	40	40	2004-2005

Contd... 2/-



इंदिरा गांधी खेल परिसर, इन्द्रप्रस्थ एस्टेट, नई दिल्ली - 110002

Indira Gandhi Sports Complex, I. P. Estate, New Delhi -110 002

दूरभाष / Phone : 23392506, 63-65-68, 71, 73 -75 फैक्स / Fax : 011-23392554

वेबसाइट / Website : www.aicte.ernet.in

Handwritten signature and date:
2/12/04

The Approval accorded above is subject to the conditions that any of the following is not violated or intervened during the period of validity of said approval:

1. The institution must continue to have Affiliation to a University for the above courses before making admissions. In the absence of such Affiliation this letter of approval shall be treated as Withdrawn (Order of the High Court of Madras in W. P. No. 33256 of 2002 and other Batch of Petitions).
2. The approved course(s) shall commence as per the academic calendar of the Affiliating University.
3. If this letter of approval is received by you after the closing date of State / National Level Central Counseling for Admissions in the concerned State / Union Territory, this Letter of Approval will not be valid for making any admission during the above specified academic year, and shall be treated as withdrawn.
4. *No excess admission shall be made by the Institution during any academic year.*
5. The approval is valid only for the academic year 2004-2005. If no further extension of AICTE approval is received beyond the academic year 2004-2005, this Approval Letter will not be valid for making any admission for the subsequent years.
6. Any other condition(s) as may be specified by AICTE from time to time.

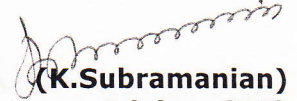
Consequent to the Supreme Court Judgment, the Model Constitution of Governing Body notified by AICTE in its approval Regulations 1994, stands overruled. It has been decided that while AICTE will not insist on any nomination in the Governing Body of Private Unaided Institutions, the Affiliating University / State Government shall impose minimum conditions of affiliation, such as, prescription of qualifications of Governing Body Members, in order to ensure academic excellence. It shall be desirable for the private unaided institutions to induct at least 50% of the members of the Governing Body drawn from renowned academia, academic administrators, Subject Experts and professionals from industry, in order to seek their innovative ideas for continuous improvement in the delivery of teaching learning process, matching best practices elsewhere and achieve excellence.

In exercise of power conferred under 10(p) of the AICTE Act, AICTE, may inspect the institution any time, it may deem fit to verify the progress / compliance or for any other purpose.

The suggested improvements, enclosed, herewith, should be complied with before the commencement of the next academic year, failing which appropriate action may be effected.

In the event of infringement / contravention or non-compliance of the above Conditions and / or the provisions of AICTE Act & Regulations / Guidelines / Norms & Standards as prescribed by AICTE, further actions leading to "Reduced Intake" or "No Admission or Withdrawal of Approval, may be taken by AICTE and the liability arising out of such action shall be solely that of the Management of the Institution.

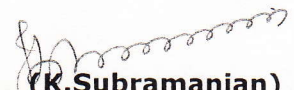
Yours faithfully,


(K. Subramanian)
Adviser (PG)

Encl.: Suggested Improvements (Specific Conditions) :

Copy to:

- The Regional Officer, AICTE , SWRO, P.K.Road, Palace Road, Bangalore - 560 009, Karnataka
- The Concerned Registrar,
- The Principal / Director
**SBRR MAHAJANA FIRST GRADE COLLEGE,
JAYALAKSHMIPURAM,
MYSORE-570 012**
- The Director of Technical Education, Govt. of Karnataka, Palace Road, Bangalore - 560 001
- Guard File, Bureau (PG), AICTE.


(K. Subramanian)
Adviser (PG)

TO MES
P. Srinivas
25/5/04



अखिल भारतीय तकनीकी शिक्षा परिषद्
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(भारत सरकार का एक सांविधिक संस्थान) (A STATUTORY BODY OF THE GOVERNMENT OF INDIA)

53
F.No 411/KA-031/ET-MCA/99
Dated:-June 4, 2002

To

The Secretary Education Dept.,
Govt. of Karnataka, M S Building,
Bangalore - 560 001.
Karnataka.

15/07/02

Subject: Extension of Approval, to SBRR MAHAJANA FIRST GRADE COLLEGE,,JAYALAKSHMIPURAM,,MYSORE-570 012,, , KARNATAKA for conduct of MCA programmes.

Sir,

I am directed to state that the All India Council for Technical Education (AICTE), is pleased to accord extension of approval to SBRR MAHAJANA FIRST GRADE COLLEGE,,JAYALAKSHMIPURAM,,MYSORE-570 012,, , KARNATAKA only for the course(s) and intake capacity as given below with the specific conditions that admission shall be made through the Central Counseling by the Govt. of KARNATAKA only:

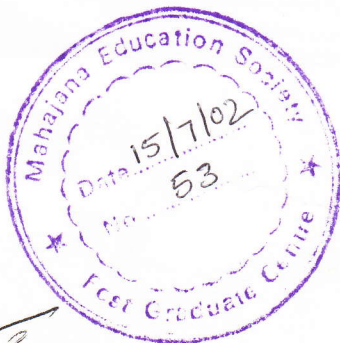
COURSE (s)	PREVIOUS APPROVED INTAKE	REVISED APPROVED INTAKE	PERIOD OF APROVAL
MCA (FT)	40.	40.	2002-2004

This approval has been accorded subject to fulfillment of specific conditions listed at Annexure- I (if any) and Norms and Standards & General Conditions as stipulated by Council in Annexure-II.

Further, in the event of infringement/contravention or non-compliance of the norms & standards prescribed by the AICTE during the last approved academic year, the Council shall take further action to withdraw approval to this case for admission during subsequent academic year and the liability arising out of such withdrawal of approval will be solely that of Management / Trust /Society and/or institutions .

The Council reserves the right to visit the Institution any time it may deem fit to verify the compliance of norms and standards of AICTE.

You are requested to kindly monitor the progress made by this institution for fulfillment of the norms & standards of the Council & keep the concerned Regional Committee and AICTE informed.



(R.S. GAUD)
ADVISER (PGER)

Contd...2/-

copy to:

1. The Regional Officer,
AICTE, Southern Regional Officer,
Health Centre Building,
Bangalore University Campus,
Bangalore – 560 009.

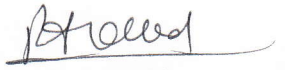
He is requested to monitor compliance with the norms & standards and conditions stipulated by the Council and keep the concerned Regional Committee and the AICTE informed of the same.

He is also requested to ensure the receipt of notarised undertaking as specified by the Council from the institution / management concerned within the stipulate time frame.

2. The Director of Technical Education,
Govt. of Karnataka, Palace Road,
Bangalore – 560 001.
3. The Registrar, UNIVERSITY OF MYSORE

He is requested to complete the process of affiliation for facilitating admissions.

4. The Principal,
SBRM MAHAJANA FIRST GRADE COLLEGE,
JAYALAKSHMIPURAM,,
MYSORE-570 012,
, KARNATAKA
5. Guard File.


(R S GAUD)
ADVISER (PGER)



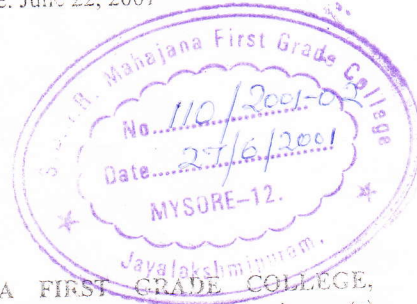
अखिल भारतीय तकनीकी शिक्षा परिषद्
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(भारत सरकार का एक सांविधिक संस्थान) (A STATUTORY BODY OF THE GOVERNMENT OF INDIA)

F.No 411/KA-031/ET-MCA/99
Date: June 22, 2001

To

The Secretary Education Department
Government of Karnataka
M.S. Building
Bangalore - 560 001

J.P.S.
27/06/01



Subject: Extension of AICTE approval to **SBRR MAHAJANA FIRST GRADE COLLEGE, JAYALAKSHMIPURAM, MYSORE-570 012** for conduct of MCA programme for the academic year(s) 2001-2002.

Sir,

I am directed to state that on consideration of the reports of the Expert Committee and in consultations with the concerned agencies in this regard, the All India Council for Technical Education (AICTE), is pleased to accord extension of approval to **SBRR MAHAJANA FIRST GRADE COLLEGE, JAYALAKSHMIPURAM, MYSORE-570 012** only for the course(s) and intake capacity as given below with the specific conditions that admission shall be made through the Central Counseling by the Govt. of Karnataka only:

Course(s)	Existing Approved Intake	New Approved/ Revised Intake	Course Duration (Years)	Period of Approval
MASTERS IN COMPUTER APPLICATIONS (MCA) FULL TIME	40.	40.	3 YEARS	2001-2002

This approval has been accorded subject to fulfillment of norms & standards of the Council for the course(s) and intake approved above.

Further the observations and specific conditions (if any) of the expert committee are annexed with this letter. The institution shall fulfill all the conditions without any delay; Non-fulfillment of the specific conditions will lead to withdrawal of approval without need of any more opportunity, as the institution is well aware of the deficiencies.

The admission will be made in accordance with Regulations notified by the AICTE vide GSR 476(E) dated 20.5.1994 based on the Hon'ble Supreme Court Judgement dated 04.02.1993 with regard to WP.No.607 of 1992 in the case of Unni Krishnan JP and other etc. V/S State Govt. of Andhara Pradesh and others etc. and later judgments. No Management/institute/trust or Society shall announce admissions directly under any circumstances. Any action contrary to this provision taken by the institute will make it liable to be derecognised.

U.S.P.
27/6/2001

Contd. 2/-



411/KA-031/ET-MCA/99

Further, in the event of infringement/contravention or non-compliance of the norms & standards prescribed by the AICTE during the last approved academic year, the Council shall take further action to withdraw approval to this case for admission during subsequent academic year and the liability arising out of such withdrawal of approval will be solely that of Management / Trust / Society and/or institutions .

The Council reserves the right to visit the Institution any time it may deem fit to verify the compliance of norms and standards of AICTE.

You are requested to kindly monitor the progress made by this institution for fulfillment of the norms & standards of the Council & keep the concerned Regional Committee and AICTE informed.

Yours faithfully



(Prof.R.S.Gaud)
Adviser (E&T)

copy to:

1. The Regional Officer, AICTE, South Western Regional Office, Bangalore University Campus, Palace Road, Bangalore - 560 009.

He is requested to monitor compliance with the norms & standards and conditions stipulated by the Council and keep the concerned Regional Committee and the AICTE informed of the same.

He is also requested to ensure the receipt of notarised undertaking as specified by the Council from the institution / management concerned within the stipulate time frame.

2. The Director of Technical Education, Govt. of Karnataka, Palace Road, Bangalore - 560 001.
3. The Registrar, UNIVERSITY OF MYSORE

He is requested to complete the process of affiliation for facilitating admissions.

4. The Principal, SBRR MAHAJANA FIRST GRADE COLLEGE,, JAYALAKSHMIPURAM, MYSORE-570 012 .
5. Guard File.

F.NO: 411/KA-031/ET-MCA/99

NAME OF THE INSTITUTE

SBRR MAHAJANA FIRST GRADE COLLEGE,
JAYALAKSHMIPURAM,
MYSORE-570 012

SPECIFIC CONDITIONS / REMARKS:

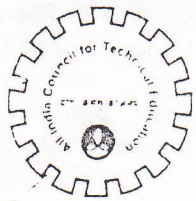
- i) AICTE pay scales are not being implemented. Faculty is not being paid AICTE pay scales. AICTE pay scales should be implemented at the earliest.
- ii) Computing facilities are inadequate and 16 additional PCs should be installed.
- iii) Faculty strength is not as per AICTE Norms. Lack of senior faculty at the level of Professor and Assistant Professor. Faculty-Student ratio should be as per AICTE Norms. Senior faculty at the level of Professor & Assistant Professor (One each) should be inducted at the earliest

R. S. D.
Adviser (E & T)

S.S.D.

(P1)

14 (52)



अखिल भारतीय तकनीकी शिक्षा परिषद्
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(भारत सरकार का एक सांविधिक संस्थान) (A STATUTORY BODY OF THE GOVERNMENT OF INDIA)

PROF. A.M. AGRAWAL
ADVISER (E&T)

F.No.: 411/KA-031/ET-MCA/99
Date: ~~October~~ 25, 2000

To,
SECRETARY, EDUCATION DEPARTMENT,
GOVT. OF KARNATAKA,
H.S. BUILDING,
BANGALORE - 560 001,
KARNATAKA.



Obtained (in Person) from
AICTE office B'lore
at 11:15 am on 26/02/01

[Signature]

Sub.: Extension of AICTE approval to SBRR MAHAJANA FIRST GRADE COLLEGE, JAYALAKSHMIPURAM, MYSORE-570 012 for conduct of Master in Computer Applications (MCA) programme for the academic year 2000-2001.

Sir,

I am directed to state that on consideration of the Reports of the Expert Committee and in consultations with the concerned agencies in this regard, the All India Council for Technical Education (AICTE) is pleased to accord extension of approval to SBRR MAHAJANA FIRST GRADE COLLEGE, JAYALAKSHMIPURAM, MYSORE-570 012 only for the course and intake capacity as given below with specific conditions that admission shall be made through the Central Counselling by the Govt. of Karnataka only :

NAME OF THE COURSE	APPROVED INTAKE
Master in Computer Applications(MCA) (3 Years Full Time)	40

This approval has been accorded subject to fulfillment of Norms and Standards of the Council for the course(s) and intake approved above.

Further, the observations and specific conditions (if any) of the expert committee are annexed to this letter. The institution shall fulfill all the conditions without any delay. Nonfulfillment will lead to withdrawal of approval without the need of any more opportunity, as the institution is well aware of the deficiencies.

[Handwritten initials]

Condt....2

The admission will be made in accordance with Regulations notified by the AICTE vide AICTE dated 20.05.1994 based on the Hon'ble Supreme Court Judgement, dated 04.02.1990 with regard to WP(C) No. 607 of 1992 in the case of Unni Krishnan v. State Government of Andhra Pradesh and others etc. and later judgements. No Management/Institute/Trust or Society shall announce admissions directly under any circumstances. Any action contrary to this provision taken by the Institute will make it liable to be derecognised.

Further, in the event of infringement/contravention or non compliance of the Norms and Standards prescribed by the AICTE during the last approved academic year, the Council shall take further action to withdraw approval to this case for admission during subsequent academic year and the liability arising out of such withdrawal of approval will be solely that of the Management/Trust/Society and/or Institutions.

The Council may inspect/visit the Institute any time it may deem fit to verify progress/compliance.

You are requested to kindly monitor the progress made by this institution for fulfillment of the Norms and Standards of the Council and keep the AICTE informed.

Yours faithfully

Anand Mohan Agrawal
(A.M. Agrawal)
25/10/90

2/3

Contd....3

Copy to:

1. The Regional Officer, South Western Regional Office, AICTE, Bangalore University Campus, Palace Road, Bangalore - 560 009.

He is requested to closely monitor the compliance of norms and standards stipulated by the Council and keep the AICTE informed of the same.

The infrastructural and other facilities shall be reviewed during the last approved academic year and recommendations of the Expert Committee be made available to AICTE.

2. Director of Technical Education, Govt. of Karnataka, Palace Road, Bangalore 560 001.

3. The Principal/ Director, CGRR NANAJANA FIRST GRADE COLLEGE, JAYALAKSHMIPURAM, MYSORE-570 012

With a request to fulfill the deficiencies as annexed to this letter and submit the compliance by december, 2000 to the Regional Office.

He is informed that this is an opportunity given to the institute.

This may also be taken as advance notice that failure to rectify the deficiencies will entail withdrawal of approval as persistence of these deficiencies are detrimental to the quality of teaching learning process.

4. The Registrar, UNIVERSITY OF MYSORE.

He is requested to complete the process of affiliation for facilitating admissions in the course(s) and intake approved by the Council.

5. Guard file, AICTE.

Pominder Randhawa

(Pominder Randhawa)
Asst. Director

373

(P4)

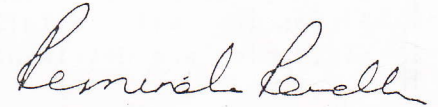
Annexure-I

F.No:411/KA-031/ET-MCA/99

SBRR Mahajana First Grade College
Jayalakshimpuram, Mysore- 570 012.

Specific Conditions:

1. Existing Temporary building is adequate for first year only.
2. Library to be up graded with 500 books of 150 titles to be added.
3. 4 Journals to be added with a full time properly qualified library & support staff should be appointed.
4. Full time full scale qualified permanent teaching staff to be appointed.
5. Advisory body as per AICTE norms to be constituted.



Rominder Randhawa
Assit. Director

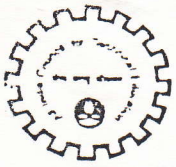
① Acton taken

②

③ Comp Today , Comp. World , PC Quest
Express World
CHIT order placed

④

⑤



अखिल भारतीय तकनीकी शिक्षा परिषद्
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(भारत सरकार का एक सांविधिक संस्थान) (A STATUTORY BODY OF THE GOVERNMENT OF INDIA)

PROF. B.S. SANGAMESHWARA
ADVISOR (E&T)

Secretary Education Department,
Govt. of Karnataka,
H.S. Building,
Bangalore-560 001.



65A
F.No.411-KA-031/ET-MCA/99
Dated:-August 12,1999

Sub: Approval to Mahajana Education Society, Jalakshmipuram, Mysore-570 012 for establishment of SBRR Mahajana First Grade College, Jayalakshmipuram, Mysore-570012 to conduct MCA (FT) programme.

Sir,

I am directed to state that on consultations with the concerned State Govt. and the affiliating University and on recommendations of the sub-committee of the concerned All India Board for Computer Science, Engineering, Technology and Application and the Expert Committee constituted by the Council, the All India Council for Technical Education (AICTE) is pleased to accord approval to Mahajana Education Society, Jalakshmipuram, Mysore-570 012 for establishment of SBRR Mahajana First Grade College, Jayalakshmipuram, Mysore-570012 for conducting the following courses & intake for the academic year 1999-2000.

COURSE	DURATION	ANNUAL INTAKE
Master in Computer Application (MCA)	3 yrs (Full Time)	40 (Forty)

This approval has been accorded subject to fulfillment of Specific Conditions as given in Annexure - 1, guidelines and Norms & Standards as stipulated by AICTE.

The admission will be made in accordance with Regulations notified by the AICTE vide GSR 476(E) dated 20-05-1994 based on the Hon'ble Supreme Court Judgement dated 04-02-1993 with regard to WP(C) No. 607 of 1992 in the case of Union Krishnaiah JP and other etc. V/s. State Government of Andhra Pradesh and others etc. and later judgements. No Management/Institute/Trust or Society shall announce admissions directly under any circumstances. Any action contrary to this provision taken by the Institute will make it liable to be derecognised.

Further in the event of infringement/contravention or non-compliance of the Norms and Standards as prescribed by the AICTE, the Council shall take further action to withdraw approval and the liability arising out of such withdrawal of approval will be solely that of the Management/ Trust/ Society and/or Institution.



अखिल भारतीय तकनीकी शिक्षा परिषद्, नई दिल्ली
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION, New Delhi

Continuation Sheet

The Council may inspect/visit the Institute/University at any time it may deem fit to note progress/compliance.

The attention of the Management is drawn to the fact that the approval given now is only for one academic session, at the end of which an Expert Committee shall visit to assess if the Norms and Standards as stipulated by AICTE are fulfilled, and only then will the continuation or otherwise shall be intimated.

You are requested to kindly monitor the progress made by the above mentioned Institute for fulfillment of the Norms and Standards of the Council and keep the concerned Regional Office and AICTE, New Delhi informed.

Yours faithfully


(B.G. Sangameshwara) 16/8/99

(Notarized Undertaking to be submitted duly signed on a non-judicial stamp paper)

I/We hereby undertake on behalf of the (Name of Trust/ Society) to follow and fulfill the following :

1. The admissions shall be made only after adequate infrastructure and all other facilities are created as per norms and guidelines of the AICTE/Govt. of India/ State Govt. and obtaining the affiliation from the concerned University in case of degree programs. The Institute shall fulfill all specific conditions (if any) as laid down in this letter or revised by the AICTE from time to time.
2. The admission to the approved program shall be made only once in a year for approved intake capacity only and no increase in intake over and above the intake mentioned in this letter shall be permitted.
3. The approved course shall commence as per the academic calendar of the affiliating university or in the month of July - August of each academic year.
The curriculum of the course, the procedure for evaluation/ assessment of students shall be in accordance with the norms prescribed by the AICTE/ affiliating agency.
5. The faculty strength and quality shall be maintained by the institute as per qualifications and pay scales prescribed by AICTE from time to time. The selection of faculty shall be made by a selection committee having representation from the State Govt./ University and AICTE.
6. The tuition fee and other charges shall be charged as prescribed by the competent authority (i.e. State Level Committee constituted by AICTE as stipulated in CSR 476(E)).
7. All academic and physical infrastructural facilities shall be continued to be provided/ updated by the institute as prescribed by AICTE from time to time.
8. No new course(s) shall be started in the same premises and no increase shall be made in the intake of other existing courses without prior concurrence of the AICTE.
9. The Governing body and Advisory body of the institute shall be constituted as per Guidelines prescribed by the AICTE from time to time.
10. The location and name of institution shall not be changed after the date of issue of first approval letter. The name and title of the institution shall not violate "The Emblems and Names (Prevention of Improper use) act 12 (1950) of Government of India.
11. No change in the composition of society/ trust shall be permitted without AICTE's prior concurrence.
12. The institution shall furnish requisite documents and reports as desired by AICTE from time to time in order to ensure proper maintenance of infrastructure and academic standards.
13. The administrative, academic and financial records including accounts shall be maintained for this Program. The accounts shall be audited annually by a Chartered Accountant and all the records and reports shall be open for inspection by the AICTE or anybody authorized by it.

Contd\2.....

11. The Council may decide to send an Expert Committee to visit the institute to verify the compliance of the conditions as laid-down and any other specific conditions to make necessary recommendations for further extension of AICTE approval to the conduct of the approved course(s).
15. The information furnished in respect of the proposal are factual and correct. In the event of any information is found to be false, misleading or suppressed at a later date the approval accorded may be withdrawn by the AICTE in pursuance of Clause 12 of AICTE Regulations, 1994.
16. In the event of non-compliance by the Society with regard to Act, Gazette Regulations/ Guidelines, norms and conditions laid down by AICTE from time to time, the AICTE or a body or a person authorized by it will be free to take measures for withdrawal of its approval without consideration of any related issues and that all liabilities arising out of such a withdrawal would solely be that of the concerned Society.
17. The institute by virtue of the approval given by AICTE shall not automatically become claimant to any financial grant or assistance from the Central or State Government.
18. The institute shall observe all instructions/ guidelines issued by the AICTE regarding mode of selection of candidates for admissions to prescribing fees. No capitation shall be charged and no charges other than the fee fixed by the Competent Authority shall be levied on students.
19. The Institution shall be liable to bear all expenses payable to the students admitted to academic programs due to discontinuation of the institution by its own will or by AICTE including all demurrages incurred due to loss of time already pursued by the admitted students in the programs. The Institution shall also be responsible for suitable demurrages to the faculty and staff recruited in it.
20. The management of the college shall fully comply with the "SCHEME" as prescribed by the Supreme Court in its judgment dated 4.2.83 with regard to WP(c) No. 607 of 1992 in the case of Unnikrishnan and others vs. State of Andhra Pradesh and others and the related guidelines and criteria as may be issued by the AICTE, UCC or the Central Government from time to time.
21. The annual intake capacity of approved program shall be restricted within the intake approved by AICTE. Under no circumstances, the Institution shall admit students in excess to the intake approved by AICTE.
22. The institutions shall not collaborate or associate with any other institution or University neither Indian nor foreign to award one or more joint degrees or diplomas to the students admitted to the AICTE approved program.
23. Each institution shall submit to AICTE, a list of candidates admitted to the approved program(s) after finalizing admission (latest by August 31 of each year) giving names, percentage of marks in qualifying examinations score in written test, group discussion and interview with relative weightage and criteria of admission followed, constitution of admission committee. (Applicable only for institutions running MBA/MCA programs.)
24. The institution shall shift to the permanent accommodation as approved by the Council within two years from the date of approval. The Institution shall not shift to any unapproved location under any circumstances.

Date :
Place :

Signature
(Chairman/ President
of Trust/ Society)

19 Accounted audited statement for the last three years

L.R. PRAKASH & CO
CHARTERED ACCOUNTANTS
NO. 138/A, 1st FLOOR, RAMAVILAS ROAD
MYSORE- 570 004

PHONE: 0821-3511175

DATE: 29-10-2021

AUDITOR'S REPORT

We have audited the attached Balance sheet, Income & Expenditure, and Receipts & Payments of MAHAJANA EDUCATION SOCIETY, JAYALAKSHMIPURAM, MYSORE for the Year ended 31-03-2021. These financial statements are the responsibility of the management of the SOCIETY. Our responsibility is to express an opinion on these financial statements based on our audit

We conducted our audit in accordance with auditing standards accepted in India. Those Standards require that, we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining on test basis evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

We have obtained all the information and explanations. Which to the best of our knowledge and belief were necessary for the purposes of audit.

The balance Sheet, Income & Expenditure Account and Receipt & Payment account dealt with by this report are in agreement with books of accounts. In our opinion and to the best of our information and according to the explanation given to us the said accounts give a true and fair view of the state of affairs of the Institution.

FOR L.R. PRAKASH & CO
CHARTERED ACCOUNTANTS
Firm Regn. No. 02733s

(G V SRINIVASA)
PARTNER
M.NO 200624

**SBRR MAHAJANA FIRST GRADE COLLEGE
(AUTONOMOUS) (UG & PG)
JAYALAKSHMIPURAM, MYSORE
BALANCE SHEET AS AT 31-03-2021**

PREV. YEAR	LIABILITES	SCH NO	AMOUNT
12,66,23,573.00	CAPITAL FUND:	I	13,65,87,408.72
6,05,945.00	OTHER FUNDS	II	4,69,184.93
	CURRENT LIABILITES:		
55,000.00	LOANS, ADVANCES & DEPOSITS	III	-
	OUTSTANDING EXPENSES:		
20,03,832.00	PROVISIONS	IV	1,06,96,006.00
9,78,011.00	SUNDRY CREDITORS	V	2,87,637.00
13,02,66,361.00			14,80,40,237.00
PREV. YEAR	ASSETS	SCH.NO	AMOUNT
86,14,252.55	CASH IN HAND & AT BANKS	VI	2,20,14,511.55
18,300.00	SECURITY DEPOSITS	VII	18,300.00
2,48,67,598.99	FIXED DEPOSITS & INVESTMENTS	VIII	77,21,058.00
43,21,817.51	LOANS & ADVANCES	IX	64,41,780.80
2,68,37,063.00	FIXED ASSETS	X	2,44,32,314.00
4,00,649.00	SUNDRY DEBTORS	XI	84,500.00
6,52,06,679.66	BRANCH/DIVISION	XII	8,73,27,772.59
13,02,66,361.00			14,80,40,237.00

T. Vijayabharathi, Chartered Accountant for **L.R. PRAKASH & Co.,**
Chartered Accountants

Honorary Secretary
MAHAJANA EDUCATION SOCIETY
Jayalakshampuram
Mysore - 570 012



(V. SRINIVASA)
PARTNER
M No. 200624
F Reg No. 0027335

(Signature)
TREASURER
MAHAJANA EDUCATION SOCIETY
Jayalakshampuram
Mysore - 570 012

(Signature)
PRESIDENT
MAHAJANA EDUCATION SOCIETY
Jayalakshampuram
Mysore 570 012

**SBRR MAHAJANA FIRST GRADE COLLEGE
(AUTONOMOUS) (UG & PG)
JAYALAKSHMIPURAM , MYSORE
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDING 31-03-2021
EXPENDITURE**

PREV. YEAR	REVENUE EXPENDITURE:	Sch No	AMOUNT
	-		
1,77,69,711.00	ADMINISTRATIVE EXPENSES	1	90,67,585.03
21,29,991.00	FEST, CONFERENCE & PROGRAMME	2	5,74,106.00
99,088.00	FINANCIAL CHARGES	3	1,28,737.25
9,23,757.00	PRINTING & STATIONERY	4	3,10,365.00
43,77,897.00	RATES, TAXES & FEES	5	16,76,477.00
70,35,785.00	REPAIRS & MAINTENANCE	6	29,52,618.00
8,92,32,148.00	SALARIES & ALLOWANCES	7	6,75,22,567.00
60,72,310.00	STUDENT WELFARE EXPENSES	8	13,13,545.00
1,06,14,589.00	REMITTANCE TO UOM	9	83,08,320.00
48,67,867.00	DEPRECIATION	X	39,70,415.00
-	EXCESS OF INCOME OVER EXPENDITURE		98,63,835.72
14,31,23,143.00			10,56,88,571.00
PREV. YEAR	REVENUE INCOME :	Sch No	AMOUNT
13,87,04,338.00	FEES COLLECTED	11	10,55,01,440.00
8,39,651.00	OTHER RECEIPTS	12	1,61,574.00
29,35,181.00	INTEREST INCOME	13	25,557.00
6,43,973.00	EXCESS OF EXPENDITURE OVER INCOME		-
14,31,23,143.00			10,56,88,571.00

T. Vijayarajendra Murugan

for **L.R.PRAKASH & Co.,**
Chartered Accountants

Honorary Secretary
MAHAJANA EDUCATION SOCIETY
Jayalakshmiapuram
Mysore 570 012



(G.V. SRINIVASA)
PARTNER
M.No.: 200624
F Reg No.: 0027335

Tejashree
TREASURER
MAHAJANA EDUCATION SOCIETY
Jayalakshmiapuram
Mysore - 570 012

P. Madhukar
PRESIDENT
MAHAJANA EDUCATION SOCIETY
Jayalakshmiapuram
Mysore 570 012

L.R. PRAKASH & CO
CHARTERED ACCOUNTANTS
 NO. 138/A, I FLOOR, RAMAVILAS ROAD
 MYSORE- 570 004

PHONE: 0821-2424997

DATE: 27-09-2020

AUDITOR'S REPORT

We have audited the attached Balance sheet, Income & Expenditure, and Receipts & Payments of MAHAJANA EDUCATION SOCIETY, JAYALAKSHMIPURAM, MYSORE for the Year ended 31-03-2020. These financial statements are the responsibility of the management of the SOCIETY. Our responsibility is to express an opinion on these financial statements based on our audit

We conducted our audit in accordance with auditing standards accepted in India. Those Standards require that, we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining on test basis evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

We have obtained all the information and explanations. Which to the best of our knowledge and belief were necessary for the purposes of audit.

The balance Sheet, Income & Expenditure Account and Receipt & Payment account dealt with by this report are in agreement with books of accounts. In our opinion and to the best of our information and according to the explanation given to us the said accounts give a true and fair view of the state of affairs of the Institution.

Revised

FOR L.R. PRAKASH & CO
 CHARTERED ACCOUNTANTS
 Firm Regn. No. 02733s

DIRECTOR
 SBRR MAHAJANA F.G. COLLEGE
 (Autonomous)
 POST GRADUATE WING
 PBM MAHAJANA EDN. CENTRE
 KRS Rd., Metagalli, MYS-570016

T. Vijayabharathi

Hon. Secretary (G V SRINIVASA)
 Mahajana Education Society (R) PARTNER
 Jayalakshimpuram M.NO 200624
 Mysore - 570 012

SBRR MAHAJANA FIRST GRADE COLLEGE

(AUTONOMOUS) (UG & PG)

JAYALAKSHMIPURAM, MYSORE

RECEIPTS AND PAYMENT ACCOUNTS FOR THE YEAR ENDING 31-03-2020

RECEIPTS		AMOUNT	PAYMENTS		AMOUNT#
REVENUE INCOME :			REVENUE EXPENDITURE :		
O	FEES COLLECTED	13,87,04,338.00	BY	SALARIES & ALLOWANCES	8,92,32,148.00
"	OTHER RECEIPTS	8,39,651.00	"	RATES, TAXES & FEES	43,77,897.00
"	INTEREST INCOME	29,35,181.00	"	ADMINISTRATIVE EXPENSES	1,77,69,711.00
"			"	FEST, CONFERENCE & PROGRAMME	21,29,991.00
"			"	FINANCIAL CHARGES	99,088.00
"			"	PRINTING & STATIONERY	9,23,757.00
OTHER RECEIPTS :			"	REPAIRS & MAINTENANCE	70,35,785.00
"	FIXED DEPOSIT WITHDRAWN	5,42,84,027.00	"	STUDENT WELFARE EXPENSES	60,72,310.00
"	OTHER ADVANCES RECOVERED	1,14,03,333.00	"	REMITTANCE TO UOM	1,06,14,589.00
"	STAFF LOAN RECOVERED	3,19,612.00			
"	STUDENT PROJECT ACCOUNT	3,14,945.00			
"	SUNDRY CREDITORS	3,16,10,482.00	OTHER PAYMENTS :		
"	PROVISION DURING THE YEAR	74,91,152.00	"	FIXED DEPOSIT MADE	2,54,39,492.00
"	SUNDRY DEBTORS	6,18,979.00	"	OTHER ADVANCES	1,43,30,677.00
"	AUTONOMOUS EXP RECOVERABLE-UOM	23,96,818.00	"	STAFF LOAN	5,11,512.00
			"	TDS BY OTHERS	1,43,705.00
			"	PROVISION PAID	75,66,730.00
BRANCH/DIVISION			"	SUNDRY CREDITORS	3,11,30,917.00
"	MES FGC ADVANCE	1,82,14,469.00	"	SUNDRY DEBTORS	7,94,980.00
			"	AUTONOMOUS EXP RECOVERABLE-UOM	15,18,600.00
			BRANCH/DIVISION		
			"	MES PGC ADVANCE	3,13,34,613.00
			FIXED ASSETS		
			"	COMPUTER EQUIPMENT	18,31,578.00
			"	LIBRARY BOOKS	2,62,483.00
			"	OFFICE EQUIPMENTS	5,69,862.00
			"	FURNITURE & FIXTURES	9,44,050.00
			"	LAB EQUIPMENTS	86,140.00
			"	GENERATOR & UPS	15,11,675.00
			"	ELECTRONIC EQUIPMENTS	2,42,550.00
			"	CCTV	3,07,203.00
			"	ELEVATOR - (LIFT)	40,66,629.00
			"	BUILDING	1,61,544.00
			"	BUILDING WIP	30,46,889.00
			CLOSING BALANCE		
	OPENING BALANCE		"	CASH IN HAND	13,663.00
"	CASH IN HAND	3.00	"	CASH AT BANK	86,00,590.00
"	CASH AT BANK	35,38,368.00			
		27,26,71,358.00			27,26,71,358.00

[Signature]

President

Mahajana Education Society (R)
Jayalakshmpuram,
Mysore-570 012

[Signature]

Honorary Secretary

MAHAJANA EDUCATION SOCIETY
Jayalakshmpuram
Mysore - 570 012

[Signature]

TREASURER

MAHAJANA EDUCATION SOCIETY
Jayalakshmpuram
Mysore - 570 012

[Signature]

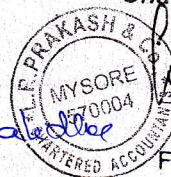
DIRECTOR

SBRR MAHAJANA F.G. COLLEGE
(Autonomous)
POST GRADUATE WING
PBM MAHAJANA EDN. CENTRE
KRS Rd., Metagalli, MYS-570016

[Signature]
3/2/21

Hon. Secretary
Mahajana Education Society (R)
Jayalakshmpuram
Mysore - 570 012

for **L.R.PRAKASH & Co.,**
Chartered Accountants



[Signature]
S.RINIVASA
PARTNER
M.No : 200624
F.Reg.No. : 002733S

SBRR MAHAJANA FIRST GRADE COLLEGE			
(AUTONOMOUS) (UG & PG)			
JAYALAKSHMIPURAM, MYSORE			
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDING 31-03-2020			
EXPENDITURE			
PREV. YEAR	REVENUE EXPENDITURE:	Sch No	AMOUNT
1,02,19,949.49	ADMINISTRATIVE EXPENSES	1	1,77,69,711.00
4,98,658.00	FEST, CONFERENCE & PROGRAMME	2	21,29,991.00
21,397.19	FINANCIAL CHARGES	3	99,088.00
3,84,155.00	PRINTING & STATIONERY	4	9,23,757.00
8,91,540.00	RATES, TAXES & FEES	5	43,77,897.00
20,96,490.00	REPAIRS & MAINTENANCE	6	70,35,785.00
3,22,45,365.00	SALARIES & ALLOWANCES	7	8,92,32,148.00
33,22,590.00	STUDENT WELFARE EXPENSES	8	60,72,310.00
1,21,53,320.00	REMITTANCE TO UOM	9	1,06,14,589.00
23,69,873.00	DEPRECIATION	X	48,67,867.00
28,88,710.18	EXCESS OF INCOME OVER EXPENDITURE		-
6,70,92,047.86			14,31,23,143.00
PREV. YEAR	REVENUE INCOME :	Sch No	AMOUNT
6,63,44,060.00	FEES COLLECTED	11	13,87,04,338.00
5,48,319.00	OTHER RECEIPTS	12	8,39,651.00
1,99,668.86	INTEREST INCOME	13	29,35,181.00
-	EXCESS OF EXPENDITURE OVER INCOME		6,43,973.00
6,70,92,047.86			14,31,23,143.00

[Signature]

President

Mahajana Education Society (R)
Jayalakshmipuram,
Mysore-570 012

[Signature]

Honorary Secretary

MAHAJANA EDUCATION SOCIETY
Jayalakshmipuram
Mysore - 570 012

[Signature]

TREASURER

MAHAJANA EDUCATION SOCIETY
Jayalakshmipuram
Mysore - 570 012

[Signature]

DIRECTOR

SBRR MAHAJANA F.G. COLLEGE
(Autonomous)
POST GRADUATE WING
PBM MAHAJANA EDN. CENTRE
KRS Rd., Metagalli, MYS-570016

[Signature]

Hon. Secretary

Mahajana Education Society (R)
Jayalakshmipuram
Mysore - 570 012



for **L.R. PRAKASH & Co.,**
Chartered Accountants

[Signature]
G.V. SRINIVASA
PARTNER
M.No : 200624
F Reg.No. : 002733S

SBRR MAHAJANA FIRST GRADE COLLEGE			
(AUTONOMOUS) (UG & PG)			
JAYALAKSHMIPURAM, MYSORE			
BALANCE SHEET AS AT 31-03-2020			
PREV. YEAR	LIABILITES	SCH NO	AMOUNT
12,60,82,963.08	CAPITAL FUND:	I	12,66,23,573.00
2,91,000.00	OTHER FUNDS	II	6,05,945.00
	CURRENT LIABILITES:		
55,000.00	LOANS, ADVANCES & DEPOSITS	III	55,000.00
	OUTSTANDING EXPENSES:		
20,79,410.00	PROVISIONS	IV	20,03,832.00
4,13,429.00	SUNDRY CREDITORS	V	9,78,011.00
12,89,21,802.08			13,02,66,361.00
PREV. YEAR	ASSETS	SCH.NO	AMOUNT
17,80,013.09	CASH IN HAND & AT BANKS	VI	86,14,252.55
18,300.00	SECURITY DEPOSITS	VII	18,300.00
-	FIXED DEPOSITS & INVESTMENTS	VIII	2,48,67,598.99
12,03,994.80	LOANS & ADVANCES	IX	43,21,817.51
1,86,74,327.00	FIXED ASSETS	X	2,68,37,063.00
-	SUNDRY DEBTORS	XI	4,00,649.00
10,72,45,167.19	BRANCH/DIVISION	XII	6,52,06,679.95
12,89,21,802.08			13,02,66,361.00

[Signature]

President

Mahajana Education Society (R)
Jayalakehmipuram,
Mysore-570 012

[Signature]

Honorary Secretary

MAHAJANA EDUCATION SOCIETY
Jayalakshnipuram
Mysore - 570 012

[Signature]

TREASURER

MAHAJANA EDUCATION SOCIETY
Jayalakshnipuram
Mysore - 570 012

[Signature]

DIRECTOR

SBRR MAHAJANA F.G. COLLEGE
(Autonomous)
POST GRADUATE WING
PBM MAHAJANA EDN. CENTRE
KRS Rd., Metagalli, MYS-570016

[Signature]

Hon. Secretary

Mahajana Education Society (R)
Jayalakshnipuram
Mysore - 570 012



for L.R. PRAKASH & Co.,
Chartered Accountants

[Signature]
G.V. SRINIVASA)
PARTNER
M.No :200624
F Reg.No.:002733S

L.R. PRAKASH & CO
CHARTERED ACCOUNTANTS
NO. 138/A, I FLOOR, RAMAVILAS ROAD
MYSORE- 570 004

PHONE: 0821-2424997

DATE: 10-08-2019

AUDITOR'S REPORT

We have audited the attached Balance sheet, Income & Expenditure, and Receipts & Payments of MAHAJANA EDUCATION SOCIETY, JAYALAKSHMIPURAM, MYSORE for the Year ended 31-03-2019. These financial statements are the responsibility of the management of the SOCIETY. Our responsibility is to express an opinion on these financial statements based on our audit

We conducted our audit in accordance with auditing standards accepted in India. Those Standards require that, we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining on test basis evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

We have obtained all the information and explanations. Which to the best of our knowledge and belief were necessary for the purposes of audit.

The balance Sheet, Income & Expenditure Account and Receipt & Payment account dealt with by this report are in agreement with books of accounts. In our opinion and to the best of our information and according to the explanation given to us the said accounts give a true and fair view of the state of affairs of the Institution.

FOR L.R. PRAKASH & CO
CHARTERED ACCOUNTANTS
Firm Regn. No. 02733s

(G V SRINIVASA)
PARTNER
M.NO 200624

POOJA BHAGAVAT MEMORIAL MAHAJANA EDUCATION CENTRE

POST GRADUATE CENTRE

METAGALLY, K.R.S.ROAD, MYSORE

RECEIPTS AND PAYMENT ACCOUNTS FOR THE YEAR ENDING 31-03-2019

RECEIPTS		AMOUNT	PAYMENTS		AMOUNT
REVENUE INCOME :			REVENUE EXPENDITURE :		
TO	FEEES COLLECTED	6,60,29,170.00	BY	SALARIES & ALLOWANCES	3,21,66,981.00
"	OTHER RECEIPTS	5,48,319.00	"	RATES, TAXES & FEES	4,16,000.00
"	INTEREST INCOME	1,99,668.86	"	ADMINISTRATIVE EXPENSES	1,08,64,719.49
"	OTHER FEES	3,14,890.00	"	FEST, CONFERENCE & PROGRAM	4,82,165.00
		-	"	FINANCIAL CHARGES	21,397.19
			"	PRINTING & STATIONERY	3,84,155.00
			"	REPAIRS & MAINTENANCE	20,96,490.00
			"	STUDENT WELFARE EXPENSES	32,48,237.00
			"	REMITTANCE TO UOM	1,21,53,320.00
					-
OTHER RECEIPTS :			OTHER PAYMENTS :		
"	FIXED DEPOSIT WITHDRAWN	12,80,23,642.21	"	FIXED DEPOSIT MADE	8,70,34,561.21
"	OTHER ADVANCES RECOVERED	47,94,550.00	"	OTHER ADVANCES	49,79,771.00
"	STAFF LOAN RECOVERED	1,52,072.00	"	STAFF LOAN	1,15,000.00
		-	"	MES ADVANCE	-
"	SUNDRY CREDITORS	1,13,93,788.00	"	TDS BY OTHERS	43,71,564.00
"	PROVISION DURING THE YEAR	42,20,042.00	"	PROVISION PAID	1,700.00
"	SECURITY DEPOSIT	-	"	SECURITY DEPOSIT	1,47,63,385.00
"	RENTAL ADVANCE	-	"	SUNDRY CREDITORS	-
"	SUNDRY DEBTORS	-	"	SUNDRY DEBTORS	-
"	TDS ON RECEIPTS	-			
			BRANCH/DIVISION		
			"	MES	3,87,26,495.07
					-
			FIXED ASSETS		
			"	COMPUTER EQUIPMENT	92,505.00
			"	LIBRARY BOOKS	1,95,121.00
			"	OFFICE EQUIPMENTS	2,02,845.00
			"	FURNITURE & FIXTURES	1,90,570.00
			"	LAB EQUIPMENTS	4,13,000.00
			"	GENERATOR & UPS	3,58,000.00
			"	ELECTRONIC & ELEC. EQUIPMEN	-
			"	PROJECTOR	82,300.00
			"	AIR CONDITIONER	2,15,250.00
			"	CCTV	5,251.00
			"	BUILDING WIP	39,99,620.00
			CLOSING BALANCE		
"	OPENING BALANCE	35,000.00	"	CASH IN HAND	3.00
"	CASH IN HAND		"	CASH AT BANK:	
"	CASH AT BANK :		"	IOB -838	(51,238.19)
"	IOB -838	2,26,064.00	"	STATE BANK OF INDIA - 2575	36,933.86
"	STATE BANK OF INDIA - 2575	36,751.00	"	SYNDICATE BANK	14,29,979.42
"	SYNDICATE BANK	3,61,930.98	"	LAKSHMI VILAS BANK - 385	3,64,335.00
"	LAKSHMI VILAS BANK - 385	84,528.00			
		21,94,20,416.05			21,94,20,416.05

for **L.R.PRAKASH & Co.,**
Chartered Accountants

Honorary Secretary
MAHAJANA EDUCATION SOCIETY
Jayalakshmiapuram
Mysore - 570 012

(G.V.SRINIVASA)
PARTNER
M.No :200624
F Reg.No.:002733S



POOJA BHAGAVAT MEMORIAL MAHAJANA EDUCATION CENTRE

POST GRADUATE CENTRE

METAGALLY, K.R.S.ROAD, MYSORE

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDING 31-03-2019

EXPENDITURE

PREV. YEAR	REVENUE EXPENDITURE:	Sch No	AMOUNT
24,87,229.07	ADMINISTRATIVE EXPENSES	1	1,08,64,719.49
5,72,485.00	FEST, CONFERENCE & PROGRAMME	2	4,82,165.00
30,918.88	FINANCIAL CHARGES	3	21,397.19
8,06,801.00	PRINTING & STATIONERY	4	3,84,155.00
3,15,257.00	RATES, TAXES & FEES	5	4,16,000.00
27,80,252.02	REPAIRS & MAINTENANCE	6	20,96,490.00
3,00,12,483.00	SALARIES & ALLOWANCES	7	3,21,66,981.00
45,79,667.00	STUDENT WELFARE EXPENSES	8	32,48,237.00
1,44,20,554.00	REMITTANCE TO UOM	9	1,21,53,320.00
27,23,388.00	DEPRECIATION	X	23,69,873.00
17,96,273.90	EXCESS OF INCOME OVER EXPENDITURE		28,88,710.18
6,05,25,308.87			6,70,92,047.86
PREV. YEAR	REVENUE INCOME :	Sch No	AMOUNT
5,64,11,950.00	FEES COLLECTED	11	6,60,29,170.00
3,27,073.00	OTHER FEES	12	3,14,890.00
4,11,415.89	OTHER RECEIPTS	13	5,48,319.00
33,52,869.98	INTEREST INCOME	14	1,99,668.86
22,000.00	RENTAL INCOME		-
6,05,25,308.87			6,70,92,047.86

for **L.R.PRAKASH & Co.,**
Chartered Accountants

Honorary Secretary
MAHAJANA EDUCATION SOCIETY
Jayalakshimpuram
Mysore - 570 012

(Signature)
G.V.SRINIVASA
PARTNER
M.No :200624
F Reg.No.:002733S



POOJA BHAGAVAT MEMORIAL MAHAJANA EDUCATION CENTRE

POST GRADUATE CENTRE

METAGALLY, K.R.S.ROAD, MYSORE

BALANCE SHEET AS AT 31-03-2019

PREV. YEAR	LIABILITES	SCH NO	AMOUNT
12,31,94,252.90	CAPITAL FUND:	I	< 12,60,82,963.08
2,91,000.00	OTHER FUNDS	II	< 2,91,000.00
55,000.00	CURRENT LIABILITES: LOANS, ADVANCES & DEPOSITS	III	< 55,000.00
22,30,932.00	OUTSTANDING EXPNSES: PROVISIONS	IV	< 20,79,410.00
7,83,026.00	SUNDRY CREDITORS	V	< 4,13,429.00
12,65,54,210.90			12,89,21,802.08
PREV. YEAR	ASSETS	SCH.NO	AMOUNT
7,44,273.98	CASH IN HAND & AT BANKS	VI	< 17,80,013.09
16,600.00	SECURITY DEPOSITS	VII	< 18,300.00
4,09,89,081.00	FIXED DEPOSITS & INVESTMENTS	VIII	-
9,95,845.80	LOANS & ADVANCES	IX	< 12,03,994.80
1,41,05,155.00	FIXED ASSETS	X	< 1,74,89,744.00
6,97,03,255.12	BRANCH/DIVISION	XI	< 10,84,29,750.19
12,65,54,210.90			12,89,21,802.08

T. Vijayabekki

**Honorary Secretary
MAHAJANA EDUCATION SOCIETY
Jayalakshimpuram
Mysore - 570 012**

for **L.R.PRAKASH & Co.,**
Chartered Accountants

[Signature]
G. SRINIVASAN
PARTNER
M.No :200624
F Reg.No.:002733S



Appendix 1 : Course Structure and Syllabi for MCA 2 year Programme with Effect from 2021-2022

**SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)
POST GRADUATE WING
(Accredited by NAAC with 'A' grade)**

**Pooja Bhagavat Memorial Mahajana Education Centre.
Affiliated to University of Mysore.**

CBCS Regulations

Master of Computer Application (M.C.A.)

Preamble

Mahajana Post Graduate Centre is an exclusive PG wing of SBRR Mahajana First Grade College (Autonomous). The centre happens to be the largest PG Centre affiliated to University of Mysore.

It was established in July 2003 with the motto "Enter to Learn, Depart to Serve". The Centre is affiliated to University of Mysore and offers Post Graduation programmes in the areas of direct relevance and value to the current generation of students. The Centre offers Post Graduate degree in 12 disciplines and is poised to start new programmes in the years to come.

M.C.A. was started in the year 1999. It is a four semester full-time programme. The course is approved by University Grants Commission and affiliated to the University of Mysore. MCA course is accredited by All India Council for Technical Education (AICTE).

1. Definitions

Course

Every course offered will have three components associated with the teaching-learning process of the course, namely

(i) Lecture – L (ii) Tutorial- T (iii) Practical - P, where

L stands Lecture session. **T** stands Tutorial session consisting participatory discussion / self study/ desk work/ brief seminar presentations by students and such other novel methods that make a student to absorb and assimilate more effectively the contents delivered in the Lecture classes.

P stands Practice session and it consists of Hands on experience / Laboratory Experiments / Field Studies / Case studies that equip students to acquire the much required skill component.

In terms of credits, every one hour session of L amounts to 1 credit per semester and a minimum of two hour session of T or P amounts to 1 credit per semester, over a period of one semester of 16 weeks for teaching-learning process. The total duration of a semester is 20 weeks inclusive of semester-end examination.

A course shall have either or all the three components. That means a course may have only lecture component, or only practical component or combination of any two or all the three components.

The total credits earned by a student at the end of the semester upon successfully completing the course are L + T + P. The credit pattern of the course is indicated as L: T: P.

If a course is of 4 credits then the different credit distribution patterns in L: T: P format could be

4 : 0 : 0,	1 : 2 : 1,	1 : 1 : 2,	1 : 0 : 3,	1 : 3 : 0,
2 : 1 : 1,	2 : 2 : 0,	2 : 0 : 2,	3 : 1 : 0,	3 : 0 : 1,
0 : 2 : 2,	0 : 4 : 0,	0 : 0 : 4,	0 : 1 : 3,	0 : 3 : 1,

The concerned BoS will choose the convenient credit pattern for every course based on the requirement. However, generally, a course shall be of 3 or 4 credits.

Different courses of study are labelled and defined as follows:

Core Course

A course which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

A Core course may be a **Soft Core** if there is a choice or an option for the candidate to choose a course from a pool of courses from the main discipline /subject of study or from a sister/related discipline / subject which supports the main discipline / subject. In contrast to the phrase Soft Core, a compulsory core course is called a **Hard Core** Course.

Elective Course

Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline / subject of study or which provides an extended scope or which enables an exposure to some other discipline / subject/domain or nurtures the candidate's proficiency/ skill is called an Elective Course. Elective courses may be offered by the main discipline/ subject of study or by sister / related discipline / subject of study. A Soft Core course may also be considered as an elective.

An elective course chosen generally from an unrelated discipline / subject, with an intention to seek exposure is called an **open elective**.

An elective course designed to acquire a special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher is called a **Self Study**.

A core course offered in a discipline / subject may be treated as an elective by other discipline / subject and vice versa.

Project work/Dissertation work is a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A project work up to 4 credits is called Minor Project work. A project work of 6 to 8 credits is called Major Project

Work. Dissertation work can be of 10-12 credits. A Project/Dissertation work may be a hard core or a soft core as decided by the BoS concerned.

2. Eligibility for Admission

Candidates possessing a degree of University of Mysore, or of any other University, equivalent there to and complying with the eligibility criteria:

Passed BCA/ Bachelor Degree in Computer Science Engineering or equivalent Degree. **OR** Passed B.Sc./ B.Com./ B.A. with Mathematics at 10+2 Level or at Graduation Level (with additional bridge Courses as per the norms of the concerned University).

Admission to MCA course shall be open for candidates who have passed the Bachelor degree examinations with not less than 50% of the marks in the aggregate of all the years of the Degree examinations. However, in the case of candidates from Karnataka belonging to SC/ST and Category-I, the aggregate percentage of marks in the qualifying examinations shall not be less than 45%. Provided that for admission to MCA, the candidate shall have passed Bachelor Degree with not less than 50% of marks with Mathematics / Statistics / Computer Science / Computer Programming / Computer Application / Business Mathematics / Business Statistics as one of the optional or electives at degree level. Provided further that in respect of candidates who have studied and passed one of the subjects specified in the first proviso in the Pre-university course with 50% of marks in that subject shall also be considered for admission.

However, in the case of candidates belonging to SC/ST and Category-I, 45% of marks in that subject shall also be considered for admission.

3. Scheme of Instructions

- 3.1 A Masters Degree program is of 4 semesters-two year's duration for regular candidates. A regular candidate can avail a maximum of 8 semesters – 4 years (in one stretch) to complete Masters Degree (including blank semesters, if any). Whenever a candidate opts for blank semester(s)/DROP in a course or in courses or is compelled to DROP a course or courses as per the provision of the regulation, he/she has to study the prevailing courses offered by the department as per the prevailing scheme, when he/she continues his/her study.
- 3.2 A candidate has to earn a minimum of 76 credits, for successful completion of a Master's degree with a distribution of credits for different courses as given in the following table.

Course Type	Credits
Hard Core	40
Soft Core	A minimum of 28, not exceeding 32
Open Elective	A minimum of 4, not exceeding 8

Every course including project work, practical work, field work, seminar, self study elective should be entitled as hard core or soft core or open elective by the BoS concerned.

- 3.3 A candidate can enrol for a maximum of 24 credits per semester with the approval of the concerned department.
- 3.4 Only such candidates who register for a minimum of 18 credits per semester in the first two semesters and complete successfully 76 credits in total of the 4 semesters be considered for declaration of ranks, medals and are eligible to apply for student fellowship, scholarship, free ships and hostel facilities.
- 3.5 In excess to the minimum of 76 credits for masters degree in the concerned discipline / subject of study, a candidate can opt to complete a minimum of 18 extra credits to acquire **add on proficiency diploma** in that particular discipline /subject along with the masters degree. In such of the cases where in, a candidate opts to earn at least 4 extra credits in different discipline / subjects in addition to a minimum of 76 credits at masters level as said above then an **add on proficiency certification** will be issued to the candidate by listing the courses studied and grades earned.
- 3.6 A candidate admitted to Masters Program can exercise an option to exit with Bachelor Honors Degree / PG diploma after earning 40 credits successfully.

4. Continuous Assessment, Earning of Credits and Award of Grades

The evaluation of the candidate shall be based on continuous assessment. The Structure for evaluation is as follows:

- 4.1 Assessment and evaluation processes happen in a continuous mode. However, for reporting purposes, a semester is divided into 3 discrete components identified as C1, C2, and C3.
- 4.2 The performance of a candidate in a course will be assessed for a maximum of 100 marks as explained below:
 - 4.2.1 The first component (C1), of assessment is for 25 marks. This will be based on test/ assignment/seminar/quiz/group discussions. During the first half of the semester, the first 50% of the syllabus will be completed. This shall be consolidated during the 8th week of the semester. Beyond 8th week, making changes in C1 is not permitted.
 - 4.2.2 The second component (C2), of assessment is for 25 marks. This will be based on test/ assignment/seminar/quiz/group discussions. The continuous assessment and scores of second half of the semester will be consolidated during the 16th week of the semester. During the second half of the semester the remaining units in the course will be completed.
 - 4.2.3 The outline for continuous assessment activities for Component-I (C1) and Component-II (C2) will be proposed by the teacher(s) concerned before the commencement of the semester and will be discussed and decided in the respective Departmental Council. The students should be informed about the modalities well in advance. The evaluated courses/assignments during component I (C1) and component II (C2) of assessment are immediately returned to the candidates after obtaining acknowledgement in the register maintained by the concern teacher for this purpose.

4.2.4 During the 18th -20th week of the semester, a semester-end examination of 2 hours duration shall be conducted for each course. This forms the third/final component of assessment (C3) and the maximum marks for the final component will be 50.

4.2.5 In case of a course with only practical component a practical examination will be conducted with two examiners (one internal and one external).

A candidate will be assessed on the basis of:

- a) Knowledge of relevant processes
- b) Skills and operations involved
- c) Results / products including calculation and reporting.

If external examiner does not turn up then both the examiners will be internal examiners. The duration for semester-end practical examination shall be decided by the departmental council.

4.2.6 Scheme of Valuation for Practical Examination:

The student is evaluated for 50 marks in C3 as per the following scheme:

There will be two questions. A candidate has to prepare procedure for both the questions and execute any one of examiner's choice:

Procedure Development	:	10 x 2=20 Marks
Implementation	:	15 x 1=15 Marks
Viva	:	10 Marks
Record	:	05 Marks
Total	:	50 Marks

*For change of question = 5 Marks will be deducted per question.

4.2.7 If **X** is the marks scored by the candidate out of 50 in C3 in theory examination, if **Y** is the marks scored by the candidate out of 50 in C3 in Practical examination, and if **Z** is the marks scored by the candidate out of 50 in C3 for a course of (L=0):T:(P=0)type that is entirely tutorial based course, then the final marks (M) in C3 is decided as per the following table.

L.T.P distribution	Find mark M in C3
L:T:P	$\frac{[(L+T)*X]+[(T+P)*Y]}{L+2T+P}$
L:(T=0):P	$\frac{(L*X)+(P*Y)}{L+P}$
L:T:(P=0)	X
L:(T=0):(P=0)	X
(L=0):T:P	Y
(L=0):(T=0):P	Y
(L=0):T:(P=0)	Z

4.2.8 The details of continuous assessment are summarized in the following table:

Component	Syllabus in a course	Weightage	Period of Continuous assessment
C1	First 50%	25%	First half of the semester To be consolidated by 8th week
C2	Remaining 50%	25%	Second half of the semester. To be consolidated by 16th week
C3	Semester-end examination (All units of the course)	50%	To be completed during 18th-20 th Week.
Final grades to be announced latest by 24th week			

4.2.9 A candidate's performance from all 3 components will be in terms of scores, and the sum of all three scores will be for a maximum of 100 marks (25 +25 + 50).

4.2.10 **Finally, awarding the grades should be completed latest by 24th week of the semester.**

4.3 **Minor/ Major Project Evaluation**

Right from the initial stage of defining the problem, the candidate has to submit the progress reports periodically and also present his/her progress in the form of seminars in addition to the regular discussion with the guide. Components of evaluation are as follows:

Component – I (C1): Periodic Progress and Progress Reports (25%)

Component – II (C2): Results of Work and Draft Report (25%)

Component– III (C3): Final Viva-voce and evaluation (50%).

The report evaluation is for 30% and Viva-voce examination is for 20%.

4.4 In case a candidate secures less than 30% in C1 and C2 put together in a course, the candidate is said to have **DROPPED** that course, and such a candidate is not allowed to appear for C3 in that course. In case a candidate's class attendance in a course is less than 75%, the candidate is said to have **DROPPED** that course, and such a candidate is not allowed to appear for C3 in that course.

Teachers offering the courses will place the above details in the Department Council meeting during the last week of the semester, before the commencement of C3, and subsequently a notification pertaining to the above will be brought out by the Chairman of the Department before the commencement of C3 examination. A copy of this notification shall also be sent to the office of the Controller of Examinations.

4.5 In case a candidate secures less than 30% in C3, he/she may choose **DROP/MAKEUP** option.

In case a candidate secures more than or equal to 30% in C3, but his/her grade(G) = 4, as per section 4.7 below, then he/she may be declared to have been conditionally successful in this

course, provided that such a benefit of conditional clearance based on G=4 shall not be availed for more than 8 credits for the entire programme of Master's Degree of two years.

A MAKE UP examination for odd semester courses will be conducted along with next regular odd semester examinations and for even semester courses along with a next regular even semester examinations. If a candidate is still unsuccessful, he/she may opt for DROP or again take up MAKE UP examination; however, not exceeding double the duration norm in one stretch from the date of joining the course.

4.6 A candidate has to re-register for the DROPPED course when the course is offered again by the department if it is a hard core course. The candidate may choose the same or an alternate core/elective in case the dropped course is soft core / elective course. A candidate who is said to have DROPPED project work has to re-register for the same subsequently within the stipulated period. **The details of any dropped course will not appear in the grade card.**

4.7 The grade and the grade point earned by the candidate in the subject will be as given below.

Marks(M)	Grade	Grade Point (GP = V x G)
30-39	4	V*4
40-49	5	V*5
50-59	6	V*6
60-64	6.5	V*6.5
65-69	7	V*7
70-74	7.5	V*7.5
75-79	8	V*8
80-84	8.5	V*8.5
85-89	9	V*9
90-94	9.5	V*9.5
95-100	10	V*10

Here, **P** is the percentage of marks ($P = [(C1+C2)+M]$) secured by a candidate in a course which is rounded to nearest integer. **V** is the credit value of course. **G** is the grade and **GP** is the grade point.

4.8 A candidate can withdraw any course within in ten days from the date of notification of final results. Whenever a candidate withdraws a paper, he/she has to register for the same course in case it is hard core course, the same course or an alternate course if it is soft core/open elective.

A DROPPED course is automatically considered as a course withdrawn.

4.9 Overall Cumulative Grade Point Average (CGPA) of a candidate after successful Completion the required number of credits (76) is given by:

$$CGPA = \Sigma GP / \text{Total number of credits}$$

5. Classification of Results

The final grade point (FGP) to be awarded to the student is based on CGPA secured by the candidate and is given as follows.

CGPA	Numerical Index	Qualitative Index
4 <= CGPA <5	5	Second Class
5 <= CGPA <6	6	
6 <= CGPA <7	7	First Class
7 <= CGPA <8	8	
8 <= CGPA <9	9	Distinction
9 <= CGPA <10	10	

Overall percentage = 10* CGPA or is said to be 50% in case CGPA<5

6. Medium of Instruction

The medium of instruction shall be English. However, a candidate will be permitted to write the examinations in either English or Kannada. This rule is not applicable to languages.

7. Provision for Appeal

If a candidate is not satisfied with the evaluation of C1 and C2 components, he / she can approach the grievance cell with the written submission together with all facts, the assignments, test papers etc., which were evaluated. He/she can do so before the commencement of semester-end examination. The grievance cell is empowered to revise the marks if the case is genuine and is also empowered to levy penalty as prescribed by the college on the candidate if his/her submission is found to be baseless and unduly motivated. This cell may recommend taking disciplinary/corrective action on an evaluator if he/she is found guilty. The decision taken by the grievance cell is final.

For every program there will be one grievance cell.

The composition of the grievance cell is as follows.

1. The Controller of Examinations ex-officio Chairman / Convener
 2. One senior faculty member (other than those concerned with the evaluation of the course concerned) drawn from the department/discipline and/or from the sister departments/sister disciplines.
 3. One senior faculty member / course expert drawn from outside the department.
8. Any other issue not envisaged above, shall be resolved by the competent authority of the autonomous college, which shall be final and binding.
 9. Any matter which is not covered under this regulation shall be resolved as per the College/Mysore University regulations.

SBRR Mahajana First Grade College (Autonomous), PG Wing

Pooja Bhagavat Memorial Mahajana Education Centre

KRS Road, Metagalli, Mysuru-570016

Master of Computer Application

Programme Structure

w.e.f. 2021-2022

List of Hard Core Courses

Sl.No.	Course Title	Credit Pattern			Credits
		L	T	P	
1	Mathematical Foundations for Computer Applications	4	0	0	4
2	Advanced Computer Networks	3	1	0	4
3	Data Structures and Algorithms	2	1	1	4
4	Operating System	3	1	0	4
5	Software Engineering	3	1	0	4
6	Object Oriented Programming with Java	3	0	1	4
7	Python Programming	3	0	1	4
8	Simulation and Modeling	3	0	1	4
9	Major Project Work	0	2	6	8

List of Soft Core Courses

Sl. No.	Course Title	Credit Pattern			Credits
		L	T	P	
1	Data Communication and Networks	3	1	0	4
2	Database Management System	3	0	1	4
3	Cloud Computing	3	1	0	4
4	System Analysis and Design	3	1	0	4
5	Web Technologies	2	1	1	4
6	Cryptography and Network Security	3	0	1	4
7	Theory of Languages and Automata	3	0	1	4
8	Probability and Statistics	3	1	0	4
9	Fundamentals of Internet of Things	3	1	0	4
10	Mobile Application Development with Android	3	0	1	4
11	Linux Programming	3	0	1	4
12	Information Retrieval	3	0	1	4
13	Big Data Analytics	3	0	1	4
14	Machine Learning	3	1	0	4
15	Advanced Java	3	0	1	4
16	Management Information Systems	3	1	0	4
17	Business Intelligence	3	1	0	4
18	Entrepreneurship Development	3	1	0	4
19	Communication Skills	3	1	0	4
20	Professional Ethics and Human Values	3	1	0	4
21	Cyber security	3	1	0	4

1	Open Elective	4 Credits
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List of Open Elective Courses

Sl.No.	CourseTitle	Credit Pattern			Credits
		L	T	P	
1	World Wide Web	2	2	0	4
2	E-Commerce	3	1	0	4
3	Office Automation	2	2	0	4

Note: We follow latest Edition Textbooks as References.

HC MATHEMATICAL FOUNDATIONS FOR COMPUTER APPLICATIONS 4:0:0

Objectives:

- Understand various concepts of mathematical logic.
- Implement set operations and functions in programming languages.
- Develop the skills to implement algebraic structures.
- Develop the basic skills of graph theory and its applications.

Outcomes:

- Develop an ability to implement various techniques of mathematical logic.
- Capability to apply the concepts of set theory.
- Ability to enhance the knowledge of algebraic structures towards computer applications.
- Ability to correlate the concepts of graph theory in computer applications.

Unit I: Mathematical Logic:

Statements and Notations, Connectives, Well-formed Formulas, Tautologies, equivalence of Formulas, Duality law, Normal Forms, The Predicate Calculus.

Unit II: Set Theory

Basic concepts, Some operations on Sets, Venn Diagrams, Cartesian Products, Relations and Ordering, Functions, Definition, Composition of functions, Inverse functions, Natural Numbers, Recursion, Recursion in Programming Languages.

Unit III: Algebraic Structures

Algebraic Systems, Examples and General Properties, Grammars and Languages, Polish Expressions and Their Compilation, Groups, Definitions and Examples, Subgroups and Homomorphism's.

Unit IV: Graph Theory

Basic concepts of Graph Theory, basic definitions, Paths, reachability, and Connectedness, matrix representation of Graphs, Trees, Storage representation and manipulation of Graphs.

References:

1. Discrete Mathematical Structures with Applications to Computer Science - Trembley, J.P. and Manohar, Tata McGraw Hill, New Delhi.
2. Discrete Mathematics and Its Applications - Kenneth H. Rosen: Fifth Edition, McGraw-Hill.

HC

ADVANCED COMPUTER NETWORKS

3:1:0

Objectives:

- To understand fundamentals of Network hardware and software.
- To Teach the applications and services of Transport layer.
- To impart the structural mechanism of TCP/IP.
- To create the awareness on the concepts of IP Security.

Outcomes:

- To employ the mechanism of Reference models and TCP/IP.
- To understand the role of Transport Layer in computer networks.
- Employ the techniques of TCP/IP.
- Comprehend the internal working mechanism of IP Security.

Unit I: Introduction

Uses of Computer Networks, Network Hardware, Network Software, Reference Models- OSI, TCP/IP.

Unit II: Transport Layer

The Transport Service, Congestion Control, History of TCP/IP, TCP Applications and Services, Motivation for Performance Study of TCP/IP, What Do We Mean by TCP Performance?, TCP/IP Fundamentals, TCP, UDP, IP, Performance Measurements of TCP/IP Networks.

Unit III: TCP/IP

TCP/IP Performance over Wireless Networks, Wireless Networks, Generic characteristics, Wireless Local Area Networks, Cellular Communications Networks, TCP Performance Issues over Wireless Links, Inappropriate Reduction of Congestion Window, Throughput Loss in WLANs, Throughput Loss in Cellular Communication Systems, Improving TCP Performance over Wireless Links, Splitting TCP Connections, Snooping TCP at Base Stations, Notifying the Causes of Packet Loss, Adding Selective Acknowledgments to TCP.

Unit IV: IP & System Security.

Overview, IP Security Policy, Encapsulating Security Payload, Combining Security Associations- Authentication Plus Confidentiality, Basic Combinations of Security Associations, Malicious Software, Types, Viruses, Antivirus Approaches, Distributed denial of service (DDoS) attacks.

References:

1. Computer Networks, Andrew S Tanenbaum, David. J. Wetherall, Pearson Education.
2. High Performance TCP/IP: Networking Concepts, Issues, and Solutions, Mahbub Hassan and Raj Jain, IST Edition, PHI Learning.
3. Network Security Essentials: Applications and Standards, William Stallings, 4th Edition, Prentice Hall.

HC

DATA STRUCTURES AND ALGORITHMS

2:1:1

Objectives:

- Impart the basic concepts of data structures and algorithms.
- Understand concepts about searching and sorting techniques.
- Know the basic concepts about stacks, queues, lists, trees and graphs.
- To gain knowledge on trees and graphs concepts.

Outcomes:

- Analyse algorithms and algorithm correctness.
- Summarize searching and sorting techniques.
- Describe stack, queue and linked list operation.
- Solve the problems by writing algorithms using fundamental data structures.

Unit I: Basics of Data Structures and Algorithms

Introduction to Data Structures: Basic Data Types - Abstract Data Types; Structure, operations on them and Implementation. Introduction to Algorithms: Fundamentals of Algorithmic problem solving, Problem types - Analysis of Algorithm Efficiency: Analysis framework - Orders of growth, asymptotic notations and basic efficiency classes.

Unit II: Stacks, Queues and Lists

Arrays: Single and Two dimensional - Stacks: Array representation, Expression evaluation, recursion – Queues: Linear queue, priority queues (heap), Linked lists: Singly linked, Doubly linked, Memory representation of lists

Unit III: Trees and Graphs

Trees: Basic Terminologies, Binary Trees and their memory representation, Binary Search Trees Graphs: Directed and Undirected graphs, Definitions, Representations, Weighted graphs, Traversals and searching BFS and DFS.

Unit IV: Algorithm Design

Divide and Conquer: General method, Binary search, Merge sort, Quick sort, Greedy Method General Method, Knapsack Problem, Minimum-Cost Spanning Trees - Kruskal's and Prim's algorithm, Single-Source Shortest Path Problem, Dijkstra's algorithm, Dynamic Programming : General Method, All Pair Shortest Paths(Floyd-Warshall algorithm); Travelling Salesman Problems.

References:

1. Fundamentals of Computer Algorithms – Ellis Horowitz, Sartaj Sahini, Sanguthevar Rajasekaran 2nd Edition, Computer Science Press.
2. Data Structures with C - Seymour Lipschutz Schaum's Outline Series
3. Classical Data Structures – Debasis Samanta, 2nd Edition, PHI Learning Pvt. Ltd.

HC

OPERATING SYSTEM

3:1:0

Objectives

- Understand the fundamental principles of operating system, processes and their communication.
- Understand the concepts of process management.
- Understand the concepts of Memory Management.
- Know the concepts of file systems and the disk management in Operating Systems.

Outcomes

Students will be able to:

- Understand the usage of the operating system components and its services.
- Employ the concepts of process management.
- Employ the concepts of Memory Management
- Apply the file handling concepts in OS perspective.

Unit I:

Introduction -Computer System Organization – Computer system architecture – Operating system operations - Operating systems services-System calls- Types of system calls – Operating system structure. Processes-process concept- process scheduling-operation on processes. Multithreaded programming – Multithreading models – Threading issues.

Unit II:

Process Scheduling - Scheduling criteria-Scheduling algorithms – Thread scheduling - Multiple-processor scheduling. Process Synchronization – Critical Section problem – Peterson’s solution – Semaphores Classical problems of synchronization - critical regions – Introduction to Monitors.

Unit III:

Deadlocks – System model - Deadlock Characterization - Deadlock handling - Deadlock Prevention - Deadlock avoidance - Deadlock Detection - Deadlock Recovery.

Memory Management – Swapping - Contiguous Memory allocation -Segmentation Paging.

Virtual Memory Management - Demand paging – Copy on write - Page Replacement - Thrashing.

Unit IV:

File System – File concept – Access methods – Directory structure – Directory and disk structure - File Systems structures - Directory Implementation - Allocation Methods - Free Space management. Disk Structures – Disk attachment - Disk Scheduling – Disk management.

References:

1. Operating Systems Concepts - Abraham Silberschatz Peter B Galvin, G.Gagne, 9th Edition, John Wiley & Sons.
2. Modern operating Systems-Andrew S.Tanenbaum, Third Edition, PHI Learning Pvt. Ltd.
3. Operating Systems: A Concept-based Approach - D M Dhamdhare, Second Edition, Tata McGraw-Hill Education.
4. Operating Systems-H M Deital, P J Deital and D R Choffnes3rd edition, Pearson Education.
5. Operating Systems: Internals and Design Principles-William Stallings, Seventh Edition, Prentice Hall.

HC

SOFTWARE ENGINEERING

3:1:0

Objectives

- Understand the importance of domain knowledge and its work around.
- Know the importance team work and stewardship.
- Analyze and implement solutions to complex problems involving computers.
- A solid understanding to the methods of Software Quality Assurance.

Outcomes

- Work in one or more significant application domains.
- Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.
- Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle.
- Demonstrate an ability to ensure Software Quality Assurance.

Unit I: Software, Software Engineering and Process Models

The Nature of Software, The Unique Nature of WebApps, Software Engineering, The Software Process, Software Engineering Practice, Software Myths, Prescriptive Process Models.

Unit II: Agile Development

What is Agility?, Agility and Cost of Change, What is an Agile Process? Extreme Programming.

Unit III: Requirements Modelling & Design

Requirements Analysis, Scenario – Based Modelling, UML Models that supplement the Use Case, Data Modelling Concepts, Requirements Modelling Strategies, Flow-oriented Modelling, Creating a behavioural model, Design concepts, Design Model.

Unit IV: Software Quality Assurance & Project Scheduling

Elements of Software Quality Assurance, SQA Tasks, Goals, Metrics, Formal Approaches to SQA, Software Reliability, Project Scheduling, Defining a task set for the Software Project, Defining a Task Network, Scheduling.

References:

1. Software Engineering, A Practitioner's Approach - Roger S Pressman, 7th Edition, McGraw Hill Education Pvt. Limited.
2. Software Engineering - Ian Sommerville, 8th Edition, Pearson Education Ltd.
3. Fundamentals of software engineering - Rajib Mall, Phi learning Pvt. Ltd, 3rd edition.

HC

OBJECT ORIENTED PROGRAMMING WITH JAVA

3:0:1

Objectives:

- Gain knowledge about basic of Java language syntax and semantics.
- Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms.
- Gain knowledge on multi-threads programming.

Outcomes:

- Identify classes, objects, members of a class and relationships among them needed for a specific problem.
- Write Java programs to implement error handling techniques using exception handling.
- Develop computer programs to solve real world problems in JAVA.

Unit – I

An Overview of Java: Object-Oriented Programming, A First Simple Program, A Second Short Program, Two Control Statements, Using Blocks of Code, Lexical Issues, The Java Class Libraries, Data Types, Variables, and Arrays: Java Is a Strongly Typed Language, The Primitive Types, Integers, Floating-Point Types, Characters, Booleans, A Closer Look at Literals, Variables, Type Conversion and Casting, Automatic Type Promotion in Expressions, Arrays, A Few Words About Strings.

Unit – II

Introducing Classes: Class Fundamentals, Declaring Objects, Assigning Object Reference Variables, Introducing Methods, Constructors, The this Keyword, Garbage Collection, The finalize() Method, A Stack Class, A Closer Look at Methods and Classes: Overloading Methods, Using Objects as Parameters, A Closer Look at Argument Passing, Returning Objects, Recursion, Introducing Access Control, Understanding static, Introducing final, Arrays Revisited, Inheritance: Inheritance Basics, Using super, Creating a Multilevel Hierarchy, When Constructors Are Called, Method Overriding, Dynamic Method Dispatch, Using Abstract Classes, Using final with Inheritance.

Unit – III

Packages and Interfaces: Packages, Access Protection, Importing Packages, Interfaces, Exception Handling: Exception-Handling Fundamentals, Exception Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally, Java's Built-in Exceptions, Creating Your Own Exception Subclasses, Chained Exceptions, Using Exceptions.

Unit – IV

Multithreaded Programming: The Java Thread Model, The Main Thread, Creating a Thread, Creating Multiple Threads, Using isAlive() and join(), Thread Priorities, Synchronization. I/O Basics, Reading Console Input, Writing Console Output, ThePrintWriter Class, Reading and Writing Files.

References

1. Herbert Schildt, Java 2, The Complete Reference, Tata McGraw Hill.
2. E. Balaguruswamy, Programming with JAVA A Primer, McGraw Hill Education. Pvt. Ltd.

HC

PYTHON PROGRAMMING

3:0:1

Objectives:

- To write simple Python programs.
- To develop Python programs with conditionals statements and loops.
- To use Python data structures – lists, tuples, dictionaries.
- Design user defined functions, modules, and packages and exception handling methods.
- Create and handle files in Python and learn Object Oriented Programming Concepts.

Outcomes:

- Develop algorithmic solutions to simple computational problems.
- Read, write, execute by hand simple Python programs.
- Structure simple Python programs for solving problems.
- Decompose a Python program into functions.
- Represent compound data using Python lists, tuples and dictionaries.

Unit – I: Introduction, Datatypes, Input/Output, Operators and Expressions

Introduction to Python Programming Language: Programming Language, History and Origin of Python Language, Features of Python, Limitations, Major Applications of Python, Getting, Installing Python, Setting up Path and Environment Variables, Running Python, First Python Program, Python Interactive Help Feature, Python differences from other languages.

Python Data Types & Input/Output: Keywords, Identifiers, Python Statement, Indentation, Documentation, Variables, Multiple Assignment, Understanding Data Type, Data Type Conversion, Python Input and Output Functions, Import command.

Operators and Expressions: Operators in Python, Expressions, Precedence, Associativity of Operators, Non-Associative Operators.

Unit – II: Control Structures, Data types and functions

Control Structures: Decision making statements, Python loops, Python control statements.

Python Native Data Types: Numbers, Lists, Tuples, Sets, Dictionary, Functions & Methods of Dictionary, Strings (in detail with their methods and operations).

Python Functions: Functions, Advantages of Functions, Built-in Functions, User defined functions, Anonymous functions, Pass by value Vs. Pass by Reference, Recursion, Scope and Lifetime of Variables.

Unit – III: Modules, Classes and Objects

Python Modules: Module definition, Need of modules, Creating a module, Importing module, Path Searching of a Module, Module Reloading, Standard Modules, Python Packages.

Classes and Objects: The concept of OOPS in Python, Designing classes, Creating objects, Accessing attributes, Editing class attributes, Built-in class attributes, Garbage collection, Destroying objects.

Unit – IV: Exception Handling and Files

Exception Handling: Exceptions, Built-in exceptions, Exception handling, User defined exceptions in Python.

File Management in Python: Operations on files (opening, modes, attributes, encoding, closing), read() & write() methods, tell() & seek() methods, renaming & deleting files in Python, directories in Python.

References:

1. Programming in Python, Pooja Sharma, BPB Publications.
2. Core Python Programming, R. Nageswara Rao, 2nd edition, Dreamtech.
3. Python, The complete Reference, Martin C. Brown, McGraw Hill Education.
4. Python in a Nutshell, A. Martelli, A. Ravenscroft, S. Holden, OREILLY.

HC

SIMULATION AND MODELING

3:0:1

Objectives:

- To make students understand the basic principles of Simulation.
- To learn basic components of a system with classification and examples.
- To understand different methods for random number generation.
- To know different types of simulations with respect to output analysis.

Outcomes:

- Implementation of different algorithms associated with generation of Random numbers.
- Analyzing the real time problems with respect to verification and validation of Simulation Models.
- Understanding the output analysis for different types of Simulations.

Unit I: Introduction to Simulation

Definition of Simulation, Simulation as an Appropriate and In appropriate tool, Applications of Simulation; Systems and System Environment, Components of a system, Model of a system, types and examples; discrete and continuous systems.

Unit II: Random Number Generation

Properties of Random Numbers, Generation of Pseudo-Random Numbers, Techniques for Generating Random Numbers, Tests for Random Numbers (Algorithms and Problems)- Frequency tests, Runs Tests, Gap tests.

Unit III: Random Variate Generation

Inverse Transform Technique, Direct Transformation for the normal Distribution; Convolution Method, Acceptance-Rejection Technique.

Unit-IV: Verification and Validation of Simulation Models

Model Building, Verification and Validation, Verification of Simulation Models, Calibration and Validation of models – Validating Input – Output Transformations; Output Analysis for a Single Model – Types of Simulations with Respect to Output Analysis, Output Analysis for Terminating Simulations, Output Analysis for steady state Simulations – Replication Method

References:

1. Discrete System Simulation – Jerry Banks, John S Carson II, Barry L Nelson, David M Nicol, Pearson Education Asia.
2. System Simulation - Geoffrey Gordon, Prentice Hall India.
3. System Simulation with Digital Computers - N. Deo, PHI.

SC

DATA COMMUNICATION AND NETWORKS

3:1:0

Objectives:

- Understand the basics of data communication components.
- Learn the protocols of Data link layer.
- Understand different network layer services and routing protocols
- Know the different techniques involved transport layer and application layer

Outcomes:

- Acquire knowledge on basics of Data communication components.
- Understand the usage of different protocols of Data link layer.
- Working of network layer and routing protocols.
- Gain In-depth knowledge in the different concepts involved in transport layer and application layer.

Unit I: Data Communications

Components, Data Representation, Data Flow, Networks –Network Criteria and Network Models, OSI model, TCP/IP Protocol suite, Multiplexing, Transmission media-Guided and Unguided media, Circuit Switched Networks.

Unit II: Data link layer

Introduction, Framing, Flow and error control, Protocols-Noiseless Channels and Noisy Channels, Multiple Access: Medium Access Sub Layer-ALOHA, CSMA/CD, Wired LAN – Ethernet, Wireless LAN – IEEE 802.11

Unit III: Network layer

Network Layer: IPv4 ADDRESSES, IPv6 ADDRESSES, Internet Protocol – Internetworking, IPv4, IPv6, Transition from IPv4 to IPv6, Unicast Routing protocols, Multicast routing protocols.

Unit IV: Transport Layer and Application Layer

UDP and TCP protocols, Application Layer: Name Space, Domain Name Space, Distribution of Name Space, DNS in the Internet, Remote logging - Telnet, FTP, Electronic Mail, WWW and HTTP.

References:

1. Data Communications and Networking - Behrouz A. Forouzan, Fourth Edition, TMH.
2. Computer Networks - Andrew S Tanenbaum, 5th Edition. Pearson Education, PHI.
3. Data communications and Computer Networks - P.C .Gupta, PHI.
4. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.
5. Understanding communications and Networks, 3rd Edition, W.A. Shay, Cengage Learning.
6. Computer Networking: A Top-Down Approach Featuring the Internet - James F. Kurose & Keith W. Ross, 3rd Edition, Pearson Education.
7. Data and Computer Communication- William Stallings, Sixth Edition, Pearson Education.

SC

DATABASE MANAGEMENT SYSTEM

3:0:1

Objectives:

- Understand the different issues involved in the design and implementation of a database system.
- Understand and use data manipulation language to query, update, and manage a database.
- Design and build a simple database system and demonstrate competence with the fundamental tasks involved with modelling, designing, and implementing a DBMS.
- Study different tools and terminologies of Data Mining and Data Warehousing.

Outcomes:

- Employ the techniques of SQL in Relational database.
- Implement simple database system by utilizing Data models and schema.
- Employ normalization techniques to overcome Database anomalies.
- Implement various Techniques of Data Mining and Data Warehousing.

Unit I: Database System Concepts and Data Modeling using ER Model

Introduction, Characteristics of the Database Approach, Advantages of Using a DBMS, Data Models, Schemas, and Instances, Using High-Level Conceptual Data Models for Database Design, An Example Database Application, Entity Types, Entity Sets, Attributes, and Keys, Relationship Types, Roles, and Structural Constraints, Weak Entity Types.

Unit II: Relational Data Model and Relational Database Constraints

Relational Model Concepts, Relational Constraints and Relational Database Schemas, Update Operations and Dealing with Constraint Violations, SQL Data Definitions and Data Types, Specifying Constraints in SQL, Schema Change Statements in SQL, Basic Queries in SQL, More Complex SQL Queries, INSERT, DELETE and UPDATE Statements in SQL, Specifying Constraints as Assertions and Triggers, Views in SQL.

Unit III: Introduction to SQL programming and Normalisation

Database Programming: Issues and Techniques, Database Programming with Function Calls:SQL/CLI and JDBC, Database Stored Procedures and SQL/PSM; Informal Design Guidelines for Relational Schemas, Functional Dependencies, Normal Forms Based on Primary Keys, General Definitions of Second and Third Normal Forms, Boyce-Codd Normal Form.

Unit IV: Data Mining and Data Warehousing

Overview of Data Mining Technology, Association Rules, Classification, Approaches to Other Data Mining Problems, Commercial Data Mining Tools; Introduction, Definition and Terminology of Data Warehousing, Characteristics of Data Warehouses, Data Modeling for Data Warehouses, Building a Data Warehouse, Typical Functionality of a Data Warehouse, Data Warehouse versus Views, Problems and Open Issues in Data Warehouses.

References:

1. Fundamentals of Database Systems -Navathe and Elmasri –Pearson Education, Fifth Edition.
2. Introduction to Database systems - CJ Date, Published by Addison-Wesley.
3. Database Systems Concepts, 3rd edition - Abraham Silberschatz, Henry Korth and S. Sudarshan McGraw Hill International Editions.
4. Principles of database systems - Ullman, Computer Science press.

SC

CLOUD COMPUTING

3:1:0

Objectives:

- Ability to understand various basic concepts related to Cloud Computing technologies.
- Demonstrate the architecture and concept of different cloud models: IaaS, PaaS, SaaS
- Learn cloud services for individuals.
- Understand the technologies for data security in cloud.

Outcomes:

- Demonstrate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications.
- Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud.
- Identify the cloud services for the individuals
- Acquire the knowledge on the core issues of cloud computing such as security, privacy, and interoperability.

Unit I:

Introduction: Cloud Computing in a Nutshell, Layers and Types of Clouds, Desired Features of Cloud, Cloud Infrastructure Management, Challenges and Risks. Migrating into a Cloud- The Seven-Step Model of Migration into a Cloud.

Unit II:

Software as a Service (SaaS): Evolution of SaaS, Challenges of SaaS Paradigm, New Integration Scenarios, SaaS Integration of Products and Platforms, SaaS Integration Services, Business – to Business Integration Services.

Infrastructure As a Services (IaaS): Introduction, Background & Related Work, Virtual Machines Provisioning and Manageability, Virtual Machine Migration Services, Provisioning in a Cloud Context- Amazon Elastic Computer Cloud, Aneka.

Platform As a service (PaaS): Aneka Cloud Platform, Hybrid Cloud Implementation, Aneka Hybrid Cloud Architecture.

Unit III:

The Enterprise Cloud Computing Paradigm- Background, Business Drivers Toward a Marketplace for Enterprise Cloud Computing, The Cloud Supply Chain.

Unit IV:

Data Security in the Cloud- Introduction, Current State, Cloud Computing and Identity, The Cloud, Digital Identity, and Data Security.

References:

1. Cloud Computing: Principles and Paradigms – Rajkumar Buyya, James Broberg, Andrzej M Goscinski, Wiley publication.
2. Cloud Computing: A Practical Approach - Toby Velte, Anthony Velte, McGraw-Hill Osborne Media.
3. Cloud Application Architectures: Building Applications and Infrastructure in the Cloud - George Reese, O'Reilly Publication.
4. Cloud Computing Explained: Implementation Handbook for Enterprises - John Rhoton, Recursive Press.

SC**SYSTEM ANALYSIS AND DESIGN****3:1:0****Objectives:**

- Understand the basics of system concepts and learn the feasibility study of the system.
- Learn the data analysis of a new system and tools associated in structured analysis.
- Understand the concepts of system testing and standards related to Documentation and management
- Understand the concepts of system security and recovery management

Outcomes:

- Gather data for analysis and specify the requirements of a system.
- Design system components and environments.
- Build general and detailed models that assist programmers in implementing a system.
- Design a user interface for data input and output, as well as controls to protect the system and its data.

Unit I:

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open & closed system and man-made information systems.

System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success.

Initial Investigation: Determining user's requirements and analysis, fact finding process and techniques.

Feasibility study: Determination of feasibility study, Technical, Operational & Economic Feasibilities, System performance constraints, identification of system objectives and feasibility report.

Unit II:

Cost/Benefit Analysis: Data analysis cost and benefit analysis of a new system and categories determination.

Tools of structured Analysis: Logical and Physical models, context, diagram, data dictionary, data diagram, IPO and HIPO charts, Gantt charts and pseudo codes. Flow charts- system flow chart, run flow charts etc., decision tree and decision tables.

Unit III:

Input/ Output and Form Design: Input and output form design methodologies, menu, screen design and layout consideration.

Management standards: Programming and operating standards.

Documentation standards: User and programming manual.

System testing & quality: System testing, quality assurance and software maintenance.

Unit IV:

System security: Data Security, Disaster/ recovery and ethics in system development.

Organization of EDP: Introduction, Job Responsibilities & duties of EDP Personnel- EDP manager, System Analyst, Programmers, Operators etc. Selection of Data Processing Resources: purchase, lease, rent-advantages and disadvantages.

References:

1. System Analysis and Design- Awad, Elias M- 2nd Edition, Galgotia Publication Pvt.Ltd.
2. System Analysis & Design - V K Jain, Dreamtech Press
3. Modern System Analysis &Design - A Hoffer, F George, S Valaciah Low Priced Edition, Pearson Education.
4. Information Technology & Computer Applications -V.K.Kapoor, Sultan Chand & Sons, New Delhi.

SC

WEB TECHNOLOGIES

2:1:1

Objectives:

- To help students understand the basis of Internet and how communication happens over the World Wide Web.
- To help students understand the basic building blocks of web pages using HTML and CSS.
- To help students understand and use Java script and PHP.
- To help students understand how data driven, dynamic web pages can be created using database connectivity.

Outcomes:

- Develop an ability to implement HTML5 pages using fundamental tags.
- Able to develop style sheet using CSS for a given problem.
- Able to extend JavaScript to validate a form with event handler for a given problem.
- Able to develop a dynamic website with database backend.

Unit I:

Introduction to Internet, WWW, Web Browsers, and Web Servers, URLs, MIME, HTTP, Security. Quick introduction to HTML5 : Creating simple web page, basic text formatting, presentation elements, phrase elements, lists, font, grouping elements, basic links, internal document links, email link, Image, Audio and Video, image maps, image formats, Tables – attributes, nested tables, Forms – Attributes, form controls. Introduction to HTML 5 - New tags of HTML 5 – embedding Media content, building input forms, painting on canvas.

Cascading Style Sheet : Introduction, Levels of Style Sheet and specification formats, embedded style sheet, External Style Sheet, inline Style Sheet, Class and ID method, DIV and SPAN tags, Inheritance with CSS, Introduction to CSS 3, HTML 5 and CSS3.

Unit II:

JavaScript: JavaScript in HTML, Language Basics – Variables, operators, statements, functions, Data type conversions, reference types, Document object Model - browser object model - window object, location object, navigator object, screen object, history object, Events and Event handling, Button elements, Navigator object, validations with regular expressions. Introduction to Dynamic documents, Positioning elements, moving elements, elements visibility, changing colors and fonts, dynamic content, Locating mouse cursor, reacting to a mouse click, dragging and dropping of elements.

Unit III:

PHP : Introduction to Server side Programming, Introduction to PHP , PHP and HTML, essentials of PHP, Why Use PHP, Installation of Web Server, WAMP Configurations, Writing simple PHP program, embedding with HTML, comments in PHP, Variables, Naming Conventions, Strings, String Concatenation, String functions, float functions, Arrays, Array – Key pair value, Array functions, is SET, UNSET, gettype(), settype(), control statements (if, switch), Loops, User Defined Functions (with argument, return values), global variable, default value, GET - POST method, URL encoding, HTML Encoding, Cookies, Sessions, Include statement. File:read and write from the file. Ethical use of features of PHP.

Unit IV:

PHP with MySQL, Creating Connection, Selecting Database, Perform Database (query), Use returned data, close connections, file handling in PHP – reading and writing from and to FILE. Using MySQL from PHP (Building a Guestbook).

References:

1. Internet and World Wide Web: How to Program - Paul Deitel, Harvey Deitel, Abbey Deitel, Pearson
2. HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery) 2nd Edition. Paperback – 2016 by DT Editorial Services (Author)
3. Programming PHP, Rasmus Lerdorf, Kevin Tatroe, O'Reilly Media Release, March 2002.

SC

CRYPTOGRAPHY AND NETWORK SECURITY

3:0:1

Objectives:

- Understand the principles Computer Security.
- Learn conventional cryptosystem.
- Know public key cryptosystem
- Have a detailed knowledge about authentication, hash functions and application level security mechanisms.

Outcomes:

- Implement the principles and practices of cryptographic techniques.
- Build simple cryptosystems by applying encryption algorithms.
- Comprehend secure identity management (authentication), message authentication, and digital signature techniques.
- Employ the authentication protocol and web security methods.

Unit I: Computer Security Concepts and Classical Encryption Techniques

Introduction-computer security concepts, attacks, security services, security mechanisms; Classical encryption techniques-symmetric cipher models, substitution techniques, transposition techniques, rotor machines

Unit II: Block Ciphers-DES and Introduction to Public Key Cryptography

Symmetric ciphers-Block cipher principles; DES-Algorithm, strengths and weaknesses of DES, attacks on DES and defense, multiple encryptions; Asymmetric ciphers-Essential mathematics, public key cryptography,

Unit III: RSA, MAC and Digital Signatures

RSA, Diffie Hellman key exchange, random number generation, Data integrity and authentication Hash functions; MAC; Digital signatures;

Unit IV: Key Management, Authentication and System Security

Key management; Authentication, Web and system security, Web security; IP security; E mail security; System security-intruders, malicious software, firewalls

References:

1. Cryptography and Network Security -Principles and Practice - William Stallings, PEARSON.
2. Cryptography and Network Security –Atul Kahate, Tata McGraw Hill.

SC

THEORY OF LANGUAGES AND AUTOMATA

3:0:1

Objectives:

- Introduce concepts in automata theory and theory of computation.
- Identify different formal language classes and their relationships.
- Design grammars and recognizers for different formal languages.
- Prove or disprove theorems in automata theory using its properties.

Outcomes:

- Acquire a fundamental understanding of the core concepts in automata theory and formal languages.
- Design grammars and automata (recognizers) for different language classes.
- Identify formal language classes and prove language membership properties.
- Prove and disprove theorems establishing key properties of formal languages and automata.

Unit I:

Brief introduction to Formal Proof: Deductive Proofs, Proving equivalences about sets, the contrapositive, Proof by contradiction, Counterexamples, Central concepts of automata theory: Alphabets, strings, languages.

Finite Automata: Deterministic Finite Automata, Nondeterministic Finite Automata, Equivalence of DFA and NFA, Finite Automata with Epsilon transitions.

Unit II:

Regular Expressions, Finite Automata and Regular Expressions: Converting DFAs to regular expressions by eliminating states, converting regular expressions to automata, Applications of regular expressions, Brief overview of algebraic laws of regular expressions.

Properties of Regular Languages: The pumping lemma for regular languages, Applications of the pumping lemma, Closure properties and decision properties of regular languages (proofs not necessary), Minimization of DFAs

Unit III:

Context-Free Grammars, Parse Trees, Applications of context-free grammars, Ambiguity in grammars and languages.

Pushdown Automata : Definition, Languages of a PDA, Equivalence of PDAs and CFGs, Deterministic Pushdown Automata.

Normal Forms for Context-free grammars

Unit IV:

The pumping lemma for context-free languages, Closure properties of context-free languages (proofs not necessary).

Brief introduction to Turing Machine: Notation for Turing Machine, Instantaneous descriptions for Turing Machines, Transition Diagrams for Turing Machine. Definition of Post's Correspondence Problem.

References:

1. Introduction to Automata Theory, Languages and Computation - Hopcroft J. E and Ullman, J.D, Narosa Publishing House, Delhi.
2. Introduction to Languages and Theory of Computation, -John C Martin^{3rd} edition. TMH Publication.

SC

PROBABILITY AND STATISTICS

3:1:0

Objectives:

- Extend and formalize knowledge of the theory of probability and random variables.
- Introduce new techniques for carrying out probability calculations and identifying probability distributions.
- Study elementary concepts and techniques in statistical methodology.

Outcomes:

- Use axioms and theorems to describe events and compute probabilities.
- Identify the types of random variables involved in a given problem and calculate relevant probabilities.
- Describe an appropriate statistical model for the given data and compute population parameters using appropriate estimators.

Unit I:

Probability: The concept of probability, the axioms and theorems, conditional probability, Independent Event's, Bayes Theorem. Random Variables and Probability Distributions:

Random variables, discrete probability distributions and Distribution functions: Bernoulli, Binomial, Hyper Geometric, Geometric, Poisson, Uniform.

Unit II:

Continuous Probability distribution and Distributions functions: Exponential, Normal, Uniform, Concepts of Chi square, t joint Distributions, Independent random variables, Functions of random Variables.

Unit III:

Mathematical Expectation: Definition, Functions of Random variables. The variance and Standard Deviation, Moments, Moment Generating Functions, Covariance, Correlation Coefficient. Sampling Theory & Estimation: Population and sample, Random Sampling with and without replacement, the sample mean, sampling distribution of means, proportions, differences. The sample variance, the sample distribution of variances, Point estimates, Interval estimates. Variance analysis.

Unit IV:

Tests of Hypotheses and Significance: Statistical Decisions, Statistical hypotheses, Null Hypotheses, Tests of hypotheses and significance, Type I and Type II errors, level of significance, Tests involving the Normal distribution, One-Tailed and Two-tailed, Special tests of Significance for large and small samples, The Chi-square test for goodness of fit. Introduction to regression and curve fitting.

References:

1. Fundamentals of Statistics - S C Gupta and V K Kapoor.
2. Fundamentals of Statistics - S C Gupta.
3. Probability and Statistics with Reliability, Queuing and Computer Applications -Jusgir S Trivedi, Prentice Hall of India.
4. Probability, Random Variables and Stochastic Processes - Papoulis and S. Unnikrishna Pillai, McGraw Hill, 4th Edition.
5. Probability and Statistics for Engineers- Richard A Johnson, Prentice Hall India.

SC

FUNDAMENTALS OF INTERNET OF THINGS

3:1:0

Objectives:

- Learn the impact of IoT applications and architectures in real world.
- Illustrate the various methods of deploying smart objects and connect them to network.
- Infer the role of IoT in Industry.
- Understand the role of IoT in Smart and Connected Cities and Public Safety.

Outcomes:

- Interpret the impact of IoT networks in new architectural models.
- Compare and contrast the deployment of smart objects and technologies to connect them as network.
- Elaborate the need of IoT Access Technologies.
- Identify the application of IoT in Smart and Connected Cities and Public Safety.

Unit I: Basics of IoT

What is IoT?, Genesis of IoT, IoT and Digitization, IoT Impact, Convergence of IT and OT, IoT Challenges, IoT Network Architecture and Design, Drivers Behind New Network Architectures, A Simplified IoT Architecture, The Core IoT Functional Stack.

Unit II: Smart Objects and Access Technologies

Smart Objects: The “Things” in IoT, Sensors, Actuators, and Smart Objects, Sensor Networks, Connecting Smart Objects, Communications Criteria, IoT Access Technologies (Any Three)

Unit III: IoT in Industry

IoT in Industry: Smart and Connected Cities-An IoT Strategy for Smarter Cities, Smart City IoT Architecture, Smart City Security Architecture, Smart City Use-Case Examples-Smart Traffic Control.

Unit IV: Public Safety

Overview of Public safety, An IoT Blueprint for public safety, Emergency Response IoT Architecture, IoT Public Safety Information Processing.

References:

1. IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things- David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, 1st Edition, Pearson Education.
2. Internet of Things- Srinivasa K G, CENGAGE Learning India.
3. Internet of Things (A Hands-on-Approach)-Vijay Madiseti and Arshdeep Bahga, 1stEdition, VPT.
4. Internet of Things: Architecture and Design Principles - Raj Kamal,1stEdition, McGraw Hill Education.

SC

MOBILE APPLICATION DEVELOPMENT WITH ANDROID

3:0:1

Objectives:

- Understand the concepts of mobile applications.
- Learn to design mobile applications.
- Learn android application development environment.
- Gain knowledge on Google maps and publishing android applications.

Outcomes:

- Acquire knowledge on basics of mobile application development.
- Acquire knowledge on mobile application design patterns.
- Implement android application using android application environment.
- Students must independently develop android applications and publish them.

Unit I: Getting Started with Android Application Development

All about Android - The Consumer Perspective, The Versions of Android, The Developer Perspective, The Business Perspective, Android Background Material - Getting a Feel for the Big Picture, the main window, Viewing modes, The Designer tool

Unit II: Kotlin for Java Programmers

Defining the Java Issues That Kotlin Fixes - Improving control over null references, removing raw data types, Using invariant arrays, Working with proper function types, Getting rid of the checked exceptions, Kotlin for Everyone - Moving from Development to Execution with Kotlin, What is a compiler? Understanding native code compiler or interpreter issues, Considering the Android Runtime (ART)

Unit III: Overview of Jetpack

Understanding the Benefits of Jetpack - Eliminating boilerplate code, Managing background tasks, Navigating between activities and fragments, Managing memory, Performing configuration changes, Considering the Jetpack Components – Foundation, Architecture, Behavior, UI

Unit IV: Publishing Android App

Creating a Google Play Developer Account - Preparing Your Code, Un-testing the app, Choosing Android versions, Setting your app's own version code and version name, Choosing a package name. Monetizing and Marketing Your App - Choosing a Revenue Model, Charging for your app, Offering an extended free trial, Freemium apps, Selling things with your app, Subscription pricing, Earning revenue from advertising, Variations on in-app advertising, Donationware, Offering your app for free, Marketing Your Application

References:

1. Android® Application Development ALL-IN-ONE, Barry Burd and John Paul Mueller, 3rd Edition.
2. Android in Practice - Charlie Collins, Michael Galpin and Matthias Kappler, DreamTech.
3. Beginning Objective C - James Dovey and Ash Furrow, Apress.
4. Android for programmers: An App-Driven Approach - Paul Deitel ,Harvey Deitel, Abbey Deitel and Michael Morgano, Pearson.

SC

LINUX PROGRAMMING

3:0:1

Objectives:

- Understand and make effective use of Linux utilities and Shell scripting language (bash) to solve Problems.
- Implement in C some standard Linux utilities such as ls, mv, cp etc. using system calls.
- Develop the skills necessary for systems programming including file system programming, process and signal management, and inter process communication.
- Develop the basic skills required to write network programs using Sockets.

Outcomes:

- Work confidently in Linux environment.
- Work with shell script to automate different tasks.
- Write simple system programs involving file and process management.
- Ability to write simple socket programs.

Unit I:

A brief history of Unix and Linux, Architecture, Features.

Unix/Linux Shell: Linux shell commands for getting help: Commands for getting help :whatis, man, info, apropos.

Useful unix/linux shell commands :pwd, whoami, who, ls, env, echo, history, passwd, cat, more, less, file, chmod, chown, cp, mv, mkdir, rmdir, whereis, which, locate, ln.

Quick overview of basic Linux Utilities: File handling utilities, links: hard and symbolic links, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters: grep, Text processing utilities and Backup utilities.

Shell programming with Bourne again shell(bash)- Introduction, shell responsibilities, tab completion, pipes and Redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples.

Unit II:

Sed and Awk: Sed: Scripts, Operation, Addresses, Commands.

Awk: Execution, Fields and Records, Scripts, Operation, Patterns, Actions, Associative Arrays, String and Mathematical functions, System commands in awk, Applications

Unit III:

Process : Process concept, Layout of a C program image in main memory. Process environment :environment list, environment variables, getenv, setenv, Kernel support for process, process identification, process control : process creation, replacing a process image, waiting for a process, process termination, zombie process, orphan process, system call interface for process management-fork, vfork, exit, wait, waitpid, exec family, Process Groups, Sessions and Controlling Terminal, Differences between threads and processes.

Unit IV:

Inter process Communication: Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, pipes-creation, IPC between related processes using unnamed pipes, FIFO: creation, IPC between unrelated processes using FIFOs(Named pipes), differences between unnamed and named pipes, popen and pclose library functions.

Sockets: Introduction to Berkeley Sockets, IPC over a network, Client-Server model, Socket address structures (unix domain and Internet domain), Socket system calls for connection oriented protocol and connectionless protocol, example: client/server programs-Single Server-Client connection, Comparison of IPC mechanisms.

References:

1. Linux “man” pages and “info” pages.
2. The Linux Documentation Project : <http://www.tldp.org/>
3. Unix Concepts and Applications - Sumitabha Das, 4th Edition, TMH.
4. Beej's Guide to Network Programming : <https://beej.us/guide/bgnet/>
5. Unix Network Programming - W. R. Stevens , PHI.
6. System Programming using C++ - T. Chan, Unix PHI.
7. Beginning Linux Programming - N. Mathew, R. Stones, 4th Edition, Wrox, Wiley India Edition.
8. C Programming Language - Kernighan and Ritchie, PHI.

SC

INFORMATION RETRIEVAL

3:0:1

Objectives:

- Become familiar with difference between Information retrieval and data Base Management Systems.
- Learn different indexing techniques used in retrieval system.
- Understand the concepts of cluster analysis.
- Understand the text classification techniques.

Outcomes:

- Locate relevant information in large collections of data.
- Impart features of retrieval systems for Text data.
- Analyze the performance of retrieval systems using test collection.
- Implement different clustering algorithms.

Unit I: Boolean retrieval and classical models

An example information retrieval problem, A first take at building an inverted index, Processing Boolean queries; The term vocabulary and postings lists: Document delineation and character sequence decoding, Determining the vocabulary of terms, Faster posting list intersection via skip pointers, Positional postings and phrase queries. Index construction – Blocked sort-based indexing, Single-pass in-memory indexing, Distributed indexing, dynamic indexing, other types of indexes.

Unit-II: Computing scores in a complete search system

Efficient scoring and ranking, components of an information retrieval system, vector space scoring and query operator interaction, information retrieval system evaluation, Standard test collections, Evaluation of unranked and ranked retrieval results, Assessing relevance, A broader perspective: System quality and user utility, Results snippets

Unit-III: Data Cluster analysis

What is Cluster Analysis, Different Types of clustering's, Different types of clusters, Kmeans – the basic K-means algorithm, additional Issues, K – means and different types of clusters, Strengths and weaknesses, K – means as an optimization Problem, DBSCAN – Center based approach, The DBSCAN Algorithm, Strengths and weaknesses, Fuzzy Clustering, Minimum spanning tree clustering

Unit-IV: Text classification and naive bayes

The text classification problem, Naive bayes text classification, properties of Naive bayes, feature selection, Evaluation of text classification; Support vector machines and machine learning on documents – Support vector machines and machine learning on documents - Support vector machines: The linearly separable case, Issues in the classification of text documents, Machine – learning methods in ad hoc information retrieval; Web search basics – Background and history, Web characteristics, Advertising as the economic model, The search user experience;

References:

1. Introduction to information Retrieval – Christopher D. Manning, Prabhakar Raghavan, Hinrich Schutze, Cambridge University Press.
2. Introduction to Data Mining – Pang – Ning Tan, Vipin Kumar, Michael Steinbach, Pearson.

3. Information Retrieval: Algorithms and Heuristics - David A. Grossman, Ophir Frieder, Second Edition, Springer.

SC

BIG DATA ANALYTICS

3:0:1

Objectives:

- To identify the characteristics of datasets and compare the trivial data and big data for various applications.
- To introduce to the students the concept and challenges of big data.
- To make students understand the implementation of parallel processing with Map Reduce.
- To teach the students to apply their skills and use tools to manage and analyze the big data.

Outcomes:

- Understand the concept and challenges of big data and why existing technology is inadequate to analyse the big data.
- Develop an ability to collect, manage, store, query, and analyse various form of big data.
- Understand the significance of No SQL databases over RDBMS.
- Map the impact of big data for business decisions and strategy.

Unit I: Wholeness of Big Data

Introduction; Understanding Big Data, Caselet: IBM Watson: A Big Data system; Capturing Big Data; Benefitting, Management, Organizing and Analysing Big data; Technology Challenges for Big Data; Big Data Sources and Applications

Unit II: Big Data Architecture and Distributed Computing Using Hadoop

Google query Architecture; Standard Big Data Architecture; Big data Architecture Examples – IBM Watson, Ebay, Netflix, Paypal; Introduction to Hadoop Framework, HDFS Design Goals, Master Slave Architecture; Installing HDFS – Reading and Writing Local files into HDFS, Reading and Writing Data Streams into HDFS

Unit III: Parallel Processing with Map Reduce:

Introduction, How Google search Works, Map Reduce overview; Sample Map Reduce Application: Word count, Map Reduce Programming, Map Reduce Jobs Execution, Hive and Pig Language capabilities

Unit IV: No SQL databases

Introduction, RDBMS Vs NOSQL, Types of NoSQL Databases, Architecture of No SQL, CAP theorem; HBase – Architecture Overview, Reading and Writing Data; Cassandra – Architecture Overview, Protocols, Data Model, Cassandra Writes and Reads, Replication

References

1. Big Data Made Accessible, Anil Maheshwari, Kindle Edition.
2. Big Data and Analytics, Seema Acharya, Subhashini Chellappan, Wiley Publisher.
3. Big Data Analytics, M. Vijayalakshmi, Radha Shankarmani, Wiley.
4. Data Science and Analytics, V.K.Jain, Khanna Publishing.

SC**MACHINE LEARNING****3:1:0****Objectives:**

- To acquire basic knowledge on machine learning techniques.
- To learn the techniques in the area of pattern recognition and data analytics.
- To introduce the concepts of Dimensionality Reduction and Decision Trees.
- To Impart the mechanism of Kernel machines.

Outcomes:

- Understand the basic principles of machine learning techniques.
- Understand the supervised and unsupervised machine learning algorithms.
- Choose appropriate techniques for real time problems.
- Employ the concepts of Clustering and Kernel machines.

Unit I

Introduction to Machine Learning, types of machine learning, examples. Supervised Learning: Learning class from examples, VC dimension, PAC learning, noise, learning multiple classes, regression, model selection and generalization, dimensions of a supervised learning algorithm. Parametric Methods: Introduction, maximum likelihood estimation, evaluating estimator, Bayes' estimator, parametric classification.

Unit II

Dimensionality Reduction: Introduction, subset selection, principal component analysis, factor analysis, multidimensional scaling, linear discriminant analysis. Clustering: Introduction, mixture densities, k-means clustering, expectation-maximization algorithm, hierarchical clustering, choosing the number of clusters. Non-parametric: Introduction, non-parametric density estimation, non-parametric classification.

Unit III

Decision Trees: Introduction, univariate trees, pruning, rule extraction from trees, learning rules from data. Multilayer perceptron: Introduction, training a perceptron, learning Boolean functions, multilayer perceptron, backpropagation algorithm, training procedures.

Unit IV

Kernel Machines: Introduction, optimal separating hyperplane, v-SVM, kernel tricks, vertical kernel, defining kernel, multiclass kernel machines, one-class kernel machines. Bayesian Estimation: Introduction, estimating the parameter of a distribution, Bayesian estimation, Gaussian processes.

References

1. Introduction to Machine Learning, E. Alpaydin, 2nd edition, MIT Press.
2. Machine Learning: A Probabilistic Perspective, K. P. Murphy, MIT Press.
3. Machine Learning in Action, P. Harrington, Manning Publications.
4. Pattern Recognition and Machine Learning, C. M. Bishop, Springer.
5. Machine Learning: An Algorithmic Perspective, S. Marsland, 1st edition. Chapman and Hall.
6. Machine Learning, T. Mitchell, McGraw-Hill.

SC

ADVANCED JAVA

3:0:1

Objectives:

- Define JDBC and describe the various JDBC drivers.
- List the advantages and explain the life cycle of a servlet.
- Understand various types of properties in Java beans.
- To Know the applications of Java Server Pages.

Outcomes:

- Develop component-based Java software using JavaBeans.
- Develop server-side programs in the form of servlets.
- Implement Entity Java bean in stateless and stateful environment.
- Employ the concepts of EJB and JAR files.

Unit I: J2EE overview and JDBC

The ABC of Programming Languages, Taking Programming Languages up a notch, Distributive Systems – Real Time Transmissions, Software objects, Web services, The Tier – Clients, Resources and Components, J2EE Multi – Tier Architecture, Client tier implementation, Enterprise Application Strategy, A new Strategy, The Enterprise Application.

Unit II: Servlets

Introduction, Life cycle of servlet, A simple Java servlet, Anatomy of Java servlet – Deployment Descriptor, Reading Data from a client, Reading HTTP Request Headers, Sending Data to a client and writing the HTTP Response Header, Cookies and Tracking Sessions

Unit III: Java Server Pages

Introduction, JSP tags – Variables and Objects, Methods, Control statements, Loops, Tomcat, Request String, User Sessions, Cookies, Session objects

Unit IV: Enterprise JavaBeans

Introduction, EJB containers, classes and interfaces, Deployment Descriptors – Anatomy, Environment Elements, Referencing EJB and other resources, query element; Session Java Bean- Stateless and stateful, creating a session java bean; Entity Java Bean – Container Managed Persistence, Bean Managed Persistence; The JAR File

References:

1. The Complete Reference J2EE, Jim Keogh, 1st edition, McGraw Hill Education.
2. Core and Advanced Java, Black Book, Dreamtech Press.

SC

MANAGEMENT INFORMATION SYSTEMS

3:1:0

Objectives:

- Understand the role information system in business.
- Learn different functional business management systems.
- Understand e-commerce applications and decision support systems.
- Analyzing security and ethical challenges in IT.

Outcomes:

- Explain the role of IS in business.
- Ability to explain different enterprise management and functional management systems in business.
- Identify the applications of e-commerce and issues of e-commerce.
- Understand decision support systems.

Unit I: Information System Concepts

Information Systems in Business: Introduction, The real world of Information Systems, The fundamental role of IS in business, Trends in IS, Types of Information systems, Managerial challenges of IT.

System Concepts: A foundation, Components of an Information System, Information System Resources, Information System activities, Recognizing Information Systems.

Unit II: Enterprise Business Systems and Functional Business System

Enterprise Business Systems: Introduction, Cross-functional enterprise applications, Enterprise application integration, Transaction processing systems, Enterprise collaboration systems. Functional Business Systems: Introduction, Marketing systems, Manufacturing systems, Human resource systems, Accounting systems, financial management systems.

Customer relationship management: Introduction, What is CRM? The three phases of CRM, Benefits and challenges of CRM, Trends in CRM, Enterprise resource planning: Introduction, What is ERP? Benefits and challenges of ERP, Trends in ERP. Supply chain Management: Introduction, What is SCM? The role of SCM, Benefits and challenges of SCM, Trends in SCM

Unit III: Electronic Commerce and Decision Support Systems

Electronic commerce fundamentals: Introduction, The scope of e-commerce, Essential e-commerce, processes, Electronic payment processes.

e-Commerce applications and issues: E-commerce application trends, Business-to- Consumer e-commerce, Web store requirements, Business-to-Business e-commerce, e-commerce marketplaces, Clicks and bricks in ecommerce.

Decision Support Systems- Decision support in business: Introduction, Decision support trends, Decision support systems (DSS), Management Information Systems, On-line analytical processing, Using DSS, Executive information systems, Enterprise portals and decision support, Knowledge management systems, Business and Artificial Intelligence (AI), An overview of AI, Expert systems.

Unit IV: Security and Ethical Challenges, Security Management in IT

Security and Ethical Challenges: Security, Ethical and societal challenges of IT: Introduction, Ethical responsibility of business professionals, Computer crime, Privacy issues, other challenges, Health issues, societal solutions. Security management of IT: Introduction, Tools of security management, Internetworked security defenses, other security measures, System Controls and audits.

References:

1. Management information systems- managing information technology in the internet worked enterprise, James A. O'Brien, George M. Marakas, 7th edition, Tata McGraw-Hill Publishing Company Limited.
2. Management information systems, S Sadogopan, 2nd edition, PHI.
3. Information systems for modern management, Robert G. Murdick, 3rd edition PHI.

SC

BUSINESS INTELLIGENCE

3:1:0

Objectives:

- Understand the basics of Business Intelligence and its evolution.
- Know the concepts of querying, reporting and OLAP architecture.
- Learn about the Business Intelligence lifecycle and its methodologies.
- Get an overview of various technologies associated with Business Intelligence.

Outcomes:

- Acquire the knowledge on Business Intelligence methodologies.
- Comprehend the User models of Business Intelligence in real time scenarios.
- Employ the lifecycle strategies on various BI capabilities.
- Compare and contrast various BI implementations in major companies.

Unit I: Introduction and Basics

Understanding Business Intelligence: Limited Resources, Limitless Decisions, Business Intelligence Defined: No CIA Experience Required, BI's Big Four, The BI Value Proposition, A Brief History of BI, Data collection from stone tablets to databases, BI's Split Personality: Business and Technology, BI: The people perspective; Meeting the BI Challenge: The BI Spectrum- Enterprise versus departmental BI, Strategic versus tactical business intelligence, Power versus usability in BI tools, Reporting versus predictive analytics

Unit II: Business Intelligence User Models and OLAP

Basic Reporting and Querying: Querying and reporting in context, Reporting and querying toolkit characteristics, Self-Service Reporting and Querying, Building and using ad-hoc queries, building simple on-demand self-service reports, Adding capabilities through managed querying/reporting, Data Access: Classical BI: pull-oriented information access, Emerging BI: pushing critical insights to users. OLAP: Online Analytical Processing: OLAP in Context, OLAP Application Functionality, OLAP Architecture: The OLAP Cube, OLAP access tools. OLAP versus OLTP

Unit III: The BI Lifecycle

The BI Big Picture: So Many Methodologies, So Little Time, Starting at the beginning, The exception to the rule: Micro-BI, Customizing BI for Your Needs: Your not-so-clean slate, Initial activities, Selecting BI products and technologies, Taking a Closer Look at BI Strategy: The Big Picture, Your Current BI Capabilities (or Lack Thereof), Assessing your business infrastructure, Assessing the technology stack, top to bottom, Keep the good stuff, Throw out the bad stuff

Unit IV: BI and Technology

Data Warehouses and BI, consolidating information across silos, Structuring data to enable BI, Data Models, Dimensional data model, Other kinds of data models, Data Marts, Operational Data Stores, The BI Software Marketplace - A little history, Mergers and acquisitions Major Software Companies in BI – Oracle, Microsoft, SAP, IBM

References:

1. Business Intelligence For Dummies- Swain Scheps, 1st edition, Wiley publishing.
2. Business Intelligence and Analytics: Systems for Decision Support, Ramesh Shardha. 10th edition, Pearson, 2014.
3. Business analytics for managers: taking business intelligence beyond reporting, Gert H.N, 2nd edition, Wiley Publishing.

SC

ENTREPRENEURSHIP DEVELOPMENT

3:1:0

Objectives:

- To know the fundamentals of entrepreneurship
- To learn importance of women and rural entrepreneurship
- To understand different motivating factors for entrepreneurs
- To know essence and characteristics of management

Outcomes:

- Analyze the history and need for entrepreneurship
- Employ the functions of women and rural entrepreneurship
- Inculcating the behaviors of entrepreneurs
- Comprehend the need and importance of management

Unit I: Entrepreneur & Entrepreneurship

Introduction, Evolution of the concept of Entrepreneur, Characteristics of successful entrepreneurs, the charms of becoming of an Entrepreneur, The Entrepreneurial Decision Process, Functions of Entrepreneur, Need for an Entrepreneur, Types of Entrepreneurs, Concept of Entrepreneurship, Growth of Entrepreneurship in India.

Unit II: Women and Rural Entrepreneurship

Concept of Women Entrepreneur, Functions of Women Entrepreneurs, Growth of Women Entrepreneurship in India, Problems of Women Entrepreneur, Developing Women Entrepreneurship, Meaning of Rural Entrepreneurship, Need for Rural Entrepreneurship, Rural Entrepreneurship/Industrialization in Retrospect, Problems of Rural Entrepreneurship. How to develop Rural Entrepreneurship.

Unit III: Entrepreneurial Motivation

Meaning of Entrepreneurial Motivation, Motivational Cycle or Process, Entrepreneurial Motivating Factors, Entrepreneurial Motivational Behavior – Creativity, Self-Efficacy, Locus of control, Risk taking, Leadership, Communication

Unit-IV: Management

Meaning of Management, Characteristics of Management, Difference between Management and Administration, Management as Science, Art and Profession, Importance of Management, Scope of Management, Functions of Management, Management Process, Principles of Management.

References:

1. Entrepreneurial Development, S.S Khanka, 1st edition, S.Chand Publication.
2. Dynamics of Entrepreneurship Development, Vasant Desai, 6th edition, Himayala Publishing House.
3. Entrepreneurship: New Venture Creation, David H. Holt, Pearson Publication.

SC

COMMUNICATION SKILLS

3:1:0

Objectives:

- The factors governing good communication and how good communication skills can be developed.
- How good communication skills are a critical building block to both personal and business success.
- How to use effective communication skills in business.
- The need to modify communication depending on business situation and circumstances.

Outcomes:

- Understand and apply knowledge of human communication and language processes as they occur across various contexts from multiple perspectives.
- Understand and evaluate key theoretical approaches used in the interdisciplinary field of communication.
- Find, use, and evaluate primary academic writing associated with the communication discipline.
- Communicate effectively orally and in writing.

Unit I

Importance of communication, its basic model, formal and informal communications, barriers to communication, feedback and its effectiveness, Non- Verbal communication.

Unit II

Oral communication, Speaking: Paralanguage: Sounds, stress, intonation- Art of conversation – Presentation skills, – Public speaking- Expressing Techniques, understanding your audience, importance of listening, role of visual aids, persuasive communication.

Unit III

Written communication – Good writing – Styles and Principles – Text, Email, Memorandums, reports, Letters, resume writing.

Unit IV

Group Discussion, Interview skills- types of interviews, telephonic interview, Time management, Stress management.

References

1. Business Communication for Success, University Of Minnesota Libraries Publishing Edition, 2015.
2. Soft skills: know yourself & know the world, Dr. Alex K.
3. Basic Management skills for all, S J McGrath E H, 9th Edition, PHI Learning.

SC

PROFESSIONAL ETHICS AND HUMAN VALUES

3:1:0

Objectives:

- Understand the fundamentals of Human values.
- Know the concepts of engineering ethics and responsibilities.
- Learn about the Business Intelligence lifecycle and its methodologies.
- Get an overview of Global issues and its practices.

Outcomes:

- Implement the aspects of Human Values.
- Interpret the ethics of engineering and its associated responsibilities.
- Employ the code of ethics in their profession.
- Get the awareness on Global issues in various streams.

Unit I: Human Values

Objectives, Morals, Values, Ethics, Integrity, Work ethics, Respect for others, living peacefully, Honesty, Courage, Valuing time, Cooperation, Commitment, Self-confidence, Challenges in the work place, Spirituality.

Unit II: Engineering Ethics and Safety, Responsibilities

Overview, Senses of engineering ethics Variety of moral issues, Moral dilemma, Moral autonomy Profession, Models of professional roles, Responsibility, Self-control, Self-interest, Self-respect, Safety definition, Safety and risk, Risk analysis, Confidentiality, Employee rights

Unit III: Engineering as Social Experimentation

Engineering as experimentation, Engineers as responsible experimenters, Codes of ethics, Industrial standards, A balanced outlook on law.

Unit IV: Global Issues

Globalization, Multinational corporations, Environmental ethics, Computer ethics, Weapons development, Engineers as managers, Engineers as advisors in planning and policy making Moral leadership.

References:

1. A Textbook on Professional Ethics and Human Values - R. S. Naagarazan, New age international publishers.
2. Human Values and Professional Ethics, Dr. Gurpreet Singh Uppal, 1st edition.
3. Human Values, Tripathi A. N., 3rd edition, New Age International Pvt Ltd Publisher.

SC

CYBER SECURITY

3:1:0

Objectives:

- Understand cybercrime, legal issues and cyber offences.
- Learn hand held devices, tools and methods used in cybercrime.
- Understand organizational implications and forensics.

Outcomes:

- Understand the concept of cybercrime and offenses.
- Analyze the tools and methods used in cyber security.
- Understand the need of cyber security organizations.

Unit I: Cybercrime and Cyber offenses

Cybercrime: Introduction, Cybercrime definition and origins of the word, Cybercrime and information security, who are Cybercriminals, Classifications of cybercrimes, Cybercrime: The legal perspectives, Cybercrimes: An Indian perspective, Cybercrime and the Indian ITA 2000, a global Perspective on cybercrimes.

Cyber offenses: Introduction, How criminal plan the attacks, Social Engineering, Cyber stalking, Cybercafé and Cybercrimes, the Fuel for Cybercrime.

Unit II: Cybercrime: Mobile And Wireless Devices

Cybercrime: Mobile and Wireless Devices: Introduction, Proliferation of Mobile and Wireless Devices, Trends in Mobility, Credit Card Frauds in Mobile and Wireless Computing Era, Security Challenges Posed by Mobile Devices, Registry Settings for Mobile Devices, Authentication Service Security, Attacks on Mobile/Cell Phones, Mobile Devices: Security Implications for Organizations, Organizational Measures for Handling Mobile Devices-Related Security Issues, Organizational Security Policies and Measures in Mobile Computing Era, Laptops.

Tools and Methods Used in Cybercrime: Introduction, Phishing, Password Cracking, Key loggers and Spywares, Virus and Worms, Trojan Horses and Backdoors, Steganography, DoS and DDoS Attacks, SQL Injection, Buffer Overflow, Attacks on Wireless Networks.

Unit III: Computer Forensics

Introduction, Historical background of cyber forensics, Digital forensics science, the need for computer forensics, cyber forensics and digital evidence, forensics analysis of email, digital forensics life cycle, Network forensics, setting up network forensics laboratory, computer forensics and steganography, Forensics and social networking: The security/privacy threats, Challenges in computer forensics, Special tools and techniques, Forensics Auditing, Anti Forensics.

Unit IV: Cyber security: Organizational Implications

Introduction, Cost of cybercrimes and IPR Issues: Lessons for Organizations, Web threats for organization, Security and Privacy Implications from Cloud Computing, Social media marketing, Protecting People's Privacy in the Organization, Organizational Guidelines for Internet Usage, Safe Computing Guidelines and Computer Usage Policy, Incident Handling: An essential component of cyber security., forensics best practices for organizations, Media and asset protection, importance of end point security in organizations.

References:

1. Cyber Security, Nina Godbole, Sunit Belapure, 1st edition, Wiley Publication.
2. Cyber Security & Global- Kenneth J. Knapp, Information Science Reference.
3. Information Systems Security, Nina Godbole, 1st edition, Wiley India.
4. Principles of Information Security, Michael E. Whitman, Herbert J. Mattord, 6th edition, Cengage Learning.
5. Cryptography and Network Security, William Stallings, 4th edition, Pearson Publication.

OE

WORLD WIDE WEB

[2:2:0]

Objectives:

- To provide the conceptual and technological development in the field of Internet and web designing.
- To provide a comprehensive knowledge of Internet, its applications and the TCP/IP protocols widely deployed to provide Internet connectivity worldwide.
- To understand how the World Wide Web with its widespread usefulness has become an integral part of the Internet.
- To provide an overview of basic concepts of web design.

Outcomes:

- Understand the working scheme of the Internet and World Wide Web.
- Understand fundamental tools and technologies used for web design.
- Comprehend the technologies for Hypertext Mark-up Language (HTML).
- Figure out the various security hazards on the internet and need of security measures.

Unit I

Introduction to Internet: What is Internet?, Evolution and History of Internet, Growth of Internet, Internet Services, How does the Internet Work?, Anatomy of Internet, Internet addressing, Internet vs. Intranet, and Impact of Internet.

Internet Technology and Protocol: ISO-OSI Reference Model, TCP/IP Protocol Suit, Data Transmission, Switching, Routers and Gateways, and Network Protocols.

Unit II

Internet Connectivity: Getting connected, Different types of connections, Levels of Internet Connectivity and Internet Service Provider.

Internet Tools and Multimedia: Current trends on Internet, Interactivity tools, Multimedia and Animation.

WWW and Web Browser: WWW, Evolution of Web, Basic Elements of WWW, Web Browsers and Search Engines.

Unit III

Web Publishing: Web Publishing, Standard Generalized Mark-up Language(SGML), Web Page Design.

HTML: An Introduction, HTML Categories, HTML Lists, HTML Tables, HTML Links, HTML Forms, HTML Frames, Style Sheets, Adding Pictures and Image Attributes.

Unit IV

Computer Networks: Computer Networks, Network Components, Network Topologies, Types of Network Architecture, Networks, Medium of Communication and Network Security.

Internet and Web Security: Overview of Internet Security, Aspects and Need of security, E-Mail Threats and Secure E-Mail, Web Security and Privacy concepts, Firewall, Cryptography, Digital Signature, Authentication, Authorization and Access Control, Copyright issues and Virus.

References

1. Internet Technology and Web Design by Instructional Software Research and Development (ISRD) Group, Tata MC Graw Hill.
2. Programming the World Wide Web, 4th Edition, Robert W. Sebesta.

OE

E-COMMERCE

[3:1:0]

Objectives:

- To impart knowledge on E-Commerce.
- To provide an overview of various applications connected with E-Commerce.
- To enable the learner for aiming careers in special software development involving E-Commerce technologies.
- Understand the security issues in E – commerce.

Outcomes:

- Analyse the impact of E-commerce on business models and strategy
- Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational structures.
- Assess electronic payment systems and its securities.
- Recognize and discuss global E-commerce issues.

Unit 1: Introduction to E-Commerce

Definition, Scope of E-Commerce, Hardware requirements, E-Commerce and Trade Cycle, Electronic Markets, Electronic Data Interchange and Internet Commerce.

Unit 2: Business to Business E-Commerce

Electronic Markets, Electronic Data Interchange (EDI): Technology, Standards (UN/EDIFACT), Communications, Implementations, Agreements, Security, EDI and Business, Inter-Organizational Ecommerce. Business models for E-commerce, Business Process Re-Engineering.

Unit 3: Business to Consumer E-Commerce and E-Business

Consumer trade transaction, Web metrics, Elements of E-Commerce, Industry impacts of E-business. Integrating Intranet and internet web applications across multiple networks. Internet bookshops, Software supplies and support, Electronic Newspapers, Internet Banking, Virtual Auctions, Online Share Dealing, Gambling on the net, E-Diversity, Case studies through internet.

Unit 4: Security Issues

How criminals plan attacks, passive attack, Active attacks, cyber stalking, Secure Electronic Transaction (SET) Protocol, Electronic cash over internet, Internet Security, Search engines, Intelligent agents in E-Commerce Electronic payment systems

References

1. E-Commerce: Strategy, Technologies & Applications, David Whitley, McGraw Hill.
2. E-commerce: The Cutting Edge of Business, K. K. Bajaj and Debjani Nag, 2nd Edition, McGraw Hill.
3. Handbook of Electronic Commerce, Shaw et al., Springer.
4. Global Electronic Commerce- Theory and Case Studies, C. Westland and T. H. K. Clark, University Press.
5. Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, Sunit Belapure and Nina Godbole, Wiley India.

OE

OFFICE AUTOMATION

[2:2:0]

Objectives:

- Provide a basic introduction to computers and computing environment.
- Enable the students in crafting professional documents using word pre-processors.
- Enable students use spreadsheets for tabulating and calculating data and create graphical representations of data.
- Enable students to design professional presentations.

Outcomes:

- Understand the basics of computer hardware and software.
- Prepare documents of different types.
- Ability to develop and use spreadsheets for tabulating and analysing for productivity.
- Prepare presentations.

Unit I

Introduction to Computers, Basic Anatomy of Computers and Introduction to MS-Office.

Unit II

MS-Word – Word Basics, Formatting Features, Menu, Commands, Tool Bars and their Icons, Mail Merge and Macros Creating Tables.

Unit III

MS-Excel - Introduction, Menu, Commands, Tool Bars and their Icons, and Functions.

Unit IV

MS-Power Point – Menu, Toolbar, Navigating in PowerPoint, Working with PowerPoint and Introduction to MS-Access.

References:

1. MS Office for Everyone – Sanjay Saxena, Vikas Publishing House.
2. Step by Step Microsoft Office XP, PHI.

COURSE RELATED RESEARCH ARTICLES:

Software Engineering

1. Taking the emotional pulse of software engineering —A systematic literature review of empirical studies, Mary Sánchez-Gordón , Ricardo Colomo-Palacios
<https://academic.oup.com/gigascience/articlepdf/doi/10.1093/gigascience/giz054/28698071/giz054.pdf>
2. Software engineering for scientific big data analysis, Bjorn A. Grüning , Samuel Lampa, Marc Vaudel and Daniel Blankenberg,
https://www.researchgate.net/publication/333326758_Software_engineering_for_scientific_big_data_analysis
3. Software Engineering for Machine Learning: A Case Study, Saleema Amershi, Andrew Begel, Christian Bird, Robert DeLine,
<https://ieeexplore.ieee.org/abstract/document/8804457>

Data Communication and Networks:

1. Comprehensive review for energy efficient hierarchical routing protocols on wireless sensor networks, Springer,2018, <https://link.springer.com/article/10.1007/s11276-018-1696-1>
2. A Survey on Recent Advances in Transport Layer Protocols, Michele Polese and et al, IEEE 2019, <https://ieeexplore.ieee.org/abstract/document/8786240>

Cloud Computing:

1. Research on Key Technologies of Cloud Computing, Shufen Zhang, Hongcan Yan, XuebinChen, Published by Elsevier,
<https://www.sciencedirect.com/science/article/pii/S1875389212015994>
2. Open Source Solution for Cloud Computing Platform Using OpenStack, Rakesh Kumar, Neha Gupta, Shilpi Charu, Kanishk Jain, Sunil Kumar Jangir,
https://www.researchgate.net/publication/263581733_Open_Source_Solution_for_Cloud_Computing_Platform_Using_OpenStack
3. The Challenges of Cloud Computing Management Information System in Academic Work, T.Rodmunkong,P.Wannapiroon,and P.Nilsook,
https://www.researchgate.net/publication/273897590_The_Challenges_of_Cloud_Computing_Management_Information_System_in_Academic_Work

Cryptography and Network Security:

1. A Review Paper on Cryptography, Abdalbasit Mohammed Qadir and Nurhayat Varol, IEEE 2019,
https://www.researchgate.net/profile/Abdalbasit_Mohammed/publication/334418542_A_Review_Paper_on_Cryptography/links/5db07f61299bf111d4c01521/A-Review-Paper-on-Cryptography.pdf
2. Security Evaluation of Computer Network Based on Hierarchy, Linbin Wen, International Journal of Network Security,2019,.

<http://ijns.jalaxy.com.tw/contents/ijns-v21-n5/ijns-2019-v21-n5-p735-740.pdf>

Internet of Things:

1. A Study on Internet of Things based Applications, Deeksha Jain, P. Venkata Krishna and V. Saritha,
https://www.researchgate.net/publication/227172798_A_Study_on_Internet_of_Things_based_Applications
2. IoT enabled Smart Fog Computing for Vehicular Traffic Control, Akashdeep Bhardwaj, Sam Goundar, <https://eudl.eu/pdf/10.4108/eai.31-10-2018.162221>
3. A Review of Smart Parking Using Internet of Things (IoT), Sahil Rupani, Nishant Doshi, <https://www.sciencedirect.com/science/article/pii/S1877050919317235>

Information Retrieval

1. Query expansion techniques for information retrieval: A survey, Hiteshwar Kumar Azad, Akshay Deepak, <https://www.sciencedirect.com/science/article/pii/S0306457318305466>
2. A Deep Look into neural ranking models for information retrieval, Jiafeng Guo, Yixing Fan, Liang Pang, Liu Yang, Qingyao AiHamed Zamani, Chen Wu, W. Bruce Croft, Xueqi Cheng, <https://www.sciencedirect.com/science/article/pii/S0306457319302390>
3. Fuzzy Information Retrieval Based on Continuous Bag-of-Words Model, Dong Qiu , Haihuan Jiang and Shuqiao Chen, <https://www.mdpi.com/2073-8994/12/2/225>

Big Data Analytics

1. Big data analytics as an operational excellence approach to enhance sustainable supply chain performance, Surajit Bag, Lincoln C. Wood, Lei Xud, Pavitra Dhamija, Yaşanur Kayikci, <https://www.sciencedirect.com/science/article/pii/S0921344919304653>
2. Big data analytics and firm performance: Findings from a mixed-method approach Patrick Mikalef, Maria Boura, George Lekakos, John Krogstie, <https://www.sciencedirect.com/science/article/pii/S014829631930061X>
3. The role of big data analytics in industrial Internet of Things, Muhammad Habib ur Rehman, Ibrar Yaqoo, Khaled Salah, Muhammad Imran, Prem Prakash Jayaraman, Charith Perera, <https://www.sciencedirect.com/science/article/pii/S0167739X18313645>

Machine Learning

1. Computer generated images vs. digital photographs: A synergetic feature and classifier combination approach, Eric Tokuda, Helio Pedrini and Anderson Rocha, Elsevier Journal of Vis. Commun, Image R., Vol. 24, 2013, pp. 1276-1292.
<https://www.sciencedirect.com/science/article/abs/pii/S1047320313001557>
2. Very Deep Convolutional Networks for Large-Scale Image Recognition, Karen Simonyan and Andrew Zisserman, <https://arxiv.org/pdf/1409.1556.pdf>

Cyber security:

1. Cyber Security, Rohit , Anvesh Babu , Ranjith Reddy, Sciendo, HOLISTICA Vol 10, Issue 2, 2019, <https://sciendo.com/article/10.2478/hjbpa-2019-0020>
2. Detecting cyber threats through social network analysis: short survey, Kirichenko Lyudmyla, Radivilova Tamara, Carlsson Anders, 2017, https://www.researchgate.net/publication/316766488_Detecting_cyber_threats_through_social_network_analysis_short_survey

ADDITIONAL WEB RESOURCES

1. Programming Paradigms
<https://see.stanford.edu/Course/CS107>
2. Introduction to Robotics
<https://see.stanford.edu/Course/CS223A>
3. Programming Methodology
<https://see.stanford.edu/Course/CS106A>
4. Programming Abstractions
<https://see.stanford.edu/Course/CS106B>
5. Programming for the Puzzled
<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-s095-programming-for-the-puzzled-january-iap-2018/>
6. Machine Learning
<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-867-machine-learning-fall-2006/>
7. Machine Learning for Healthcare
<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-s897-machine-learning-for-healthcare-spring-2019/>
8. Introduction to Deep Learning
<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-s191-introduction-to-deep-learning-january-iap-2020/>
9. Advanced Data Structures
<https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-851-advanced-data-structures-spring-2012/>
10. Kotlin Tutorial
<https://www.w3schools.com/kotlin/index.php>
11. Python Programming
<https://www.w3schools.com/python/default.asp>
12. Angular JS
<https://www.w3schools.com/angular/default.asp>
13. Cyber Security
<https://www.w3schools.com/cybersecurity/index.php>
14. Data Scientist
<https://www.codecademy.com/learn/paths/data-science>
15. Analyze data with Python
<https://www.codecademy.com/learn/paths/analyze-data-with-python>

Appendix 2 : Course Structure and Syllabi for MCA 3 year Programme with Effect from 2019-2020

SBRR MAHAJANA FIRST GRADE COLLEGE (Autonomous)
POST GRADUATE WING
Pooja Bhagavat Memorial Mahajana Education Centre.

Scheme & Syllabus of
Master of Computer Application w.e.f. 2019-20

List of HardCore Courses

Sl.No	Courses	Credit Pattern [L:T:P]	Credits
1.	C Programming	3:0:1	4
2.	Discrete Mathematical Structures	3:1:0	4
3.	Operating System	3:1:0	4
4.	Fundamentals of Data Structures	3:0:1	4
5.	Database Management System	3:0:1	4
6.	Object Oriented Programming with C++	3:0:1	4
7.	Advanced Software Engineering	3:1:0	4
8.	Java Programming	3:0:1	4
9.	Web Programming	2:0:2	4
10.	Analysis and Design of Algorithms	2:1:1	4
11.	Python Programming	3:0:1	4
12.	Linux Programming	3:0:1	4
13.	Dissertation Work	0:2:10	12

List of SoftCore Courses

Sl.No	Courses	Credit Pattern [L:T:P]	Credits
1.	Computer Organisation and Architecture	4:0:0	4
2.	Computer Graphics	2:1:1	4
3.	Data Communication and Networks	3:1:0	4
4.	Fundamentals of IoT Technology	3:1:0	4
5.	Communication Skills	3:1:0	4
6.	Mobile Application Development with Android	2:1:1	4
7.	Cloud Computing	3:1:0	4
8.	Advanced Java	2:1:1	4
9.	Machine Learning	2:1:1	4
10.	Graph Theory	3:1:0	4
11.	Distributed Computing	3:1:0	4
12.	Numerical Algorithms	3:0:1	4
13.	Probability and Statistics	3:1:0	4
14.	Theory of Languages and Automata	2:1:1	4
15.	Digital Image Processing	3:0:1	4
16.	Cryptography and Network Security	3:1:0	4
17.	C# Programming	3:0:1	4
18.	Operations Research	3:1:0	4
19.	System Software	3:0:1	4

20.	System Analysis and Design	3:1:0	4
21.	Information Retrieval	3:0:1	4
22.	Big Data Analytics	2:1:1	4
23.	Information Systems Management	3:1:0	4
24.	E – Commerce	3:1:0	4
25.	Simulation and Modelling	3:0:1	4
26.	Artificial Intelligence	3:1:0	4
27.	Pattern Recognition	2:1:1	4
28.	Entrepreneurship Development	3:1:0	4
29.	Cyber Security and Forensic Development	3:1:0	4
30.	Values and Ethics	3:1:0	4
31.	Mobile Communication	3:1:0	4

A Masters Degree program is of 6 semesters-three year's duration for regular candidates and 4 semester- two years duration for lateral entry candidates. A regular candidate can avail a maximum of 12 semesters – 6 years (in one stretch) to complete Masters Degree (including blank semesters, if any) whereas lateral entry candidates can avail a maximum of 8 semesters – 4 years (in one stretch) to complete Masters Degree (including blank semesters, if any).

A candidate has to earn a minimum of 112 credits, for successful completion of a Master's degree with a distribution of credits for different courses as given in the following table.

Course Type	Credits
Hard Core	60
Soft Core	A minimum of 40, but not exceeding 48
Open Elective	A minimum of 4, but not exceeding 12

Lateral entry students must earn a minimum of 76 credits, for successful completion of a Master's degree with a distribution of credits for different courses as given in the following table.

Course Type	Credits
Hard Core	40
Soft Core	A minimum of 28, but not exceeding 32
Open Elective	A minimum of 4, but not exceeding 8

Every course including project work, practical work, field work, seminar, self study elective should be entitled as hard core or soft core or open elective by the BoS concerned.

HC**C PROGRAMMING****3:0:1****Objectives:**

- Obtain knowledge on the need of programming languages, basics of C programming, operators and expressions, Input and output operations.
- Gain knowledge on Decision making, branching statements and structured data types.
- Understand the need of user defined functions.
- Understand pointers and file handling operations.

Outcomes:

Students will be able to:

- Employ the basics of C to write and execute simple C programs.
- Use Branching and looping statements in the logic of the program.
- Implement user defined functions effectively.
- Apply the concept of pointers and file handling operations in C.

Unit I: Overview of C

Importance of C, Basic structure of C Programs, Basic programming constructs-Character set, tokens, Constants, Variables, and Data Types, Keywords, Identifiers and symbolic constants.

Operators and Expression – Arithmetic, relational, logical, increment and decrement, conditional, bitwise, Expression, precedence of operators, type conversion and casting, mathematical functions.

Managing Input and Output Operations - Reading a character, writing a character, formatted input/output and unformatted input/output.

Unit II: Decision Making and Branching

Decision Making and Branching – If statement – Different forms of if statement, switch, break and continue, Looping statements in C – for, while, do while, nested loops. Structured data types in C – Array – One dimensional, two dimensional and Multi-dimensional array. Strings, Structures and union

Unit III: User-Defined Functions

Need for user-defined functions, multi-function program and general form of C function. Category of functions, nesting of functions, Recursion, functions with arrays and structures. Storage Classes - scope and lifetime of variables in functions.

Unit IV: Pointers and File Handling

Understanding pointers, accessing the address of a variable, declaring, initializing, assigning values to pointers and accessing a variable through its pointer. File Handling– Definition, need of file, opening and closing a file, Input and output operations on files and random access to files with example.

References

1. C programming Language -Kernigham and Ritchie, 2nd Edition, PHI Publications
2. Programming in ANSI C - E Balaguruswamy, 2nd Edition Tata McGraw Hill.
3. Let Us C – YashwantKanetkar, 13th Edition, BPB publication
4. Problem Solving with C - M.T. Somashekara, PHI Learning, New Delhi.

HC**DISCRETE MATHEMATICAL STRUCTURES****3:1:0****Objectives:**

- Analyze to solve problems using simple techniques of counting theory, and set theory
- Learn the fundamentals of logic and identify the Use of quantifiers, the nature of proofs.
- Learn the basic concepts of mathematical induction, Relations and functions.
- Learn the concepts of graph theory and applications.

Outcomes:

Students will be able to:

- Apply the principles of counting and set theory.
- Identify the quantifiers and their uses and Make use of fundamentals of logic theory and proofs.
- Apply the concepts of mathematical induction, relations and functions to solve given problem.
- Make use of basic concepts of graph theory and solve the given problem.

Unit I

Principles of Counting: The Rules of Sum and Product, Permutation, Combinations, combinations with repetition. Problems.

Sets and Subsets: Set Operations ,Membership table method and Venn diagram method and the Laws of Set Theory, Addition principle-Counting and Venn Diagrams, A First Word on Probability.

Unit II

Fundamentals of Logic: Basic Connectives and Truth Tables, Logic Equivalence – The Laws of Logic theory, Logical Implication – Rules of Inference. Argument – Definition, validity and invalidity.

The Use of Quantifiers: Quantifiers, Definitions ,Argument representation using quantifiers, validity.

Proofs of Theorems- Direct and Indirect method - contradiction and contrapositive method.

Unit III

Relations and Functions: Properties of the Integers: Mathematical Induction, The Well Ordering Principle- Mathematical Induction (Alternative form)(problems),Recursive Definitions

Cartesian Products and Relations, Functions – Plain and One-to-One, Onto Functions – Stirling Numbers of the Second Kind, Special Functions, The Pigeon-hole Principle, Function Composition and Inverse Functions.

Unit IV

An Introduction to Graph Theory: Definitions and examples Sub graphs, Complements, and Graph Isomorphism, Vertex Degree : Euler Trails and Circuits, Planar Graphs, Hamiltonian Paths and Cycles.

Graph coloring and Chromatic Numbers. Definitions, Properties and examples Rooted trees, Trees and sorting. Weighted Trees and Prefix codes. Spanning trees- minimal spanning tree by Prim's and Kruskal's Algorithm.

References:

1. Discrete and Combinatorial Mathematics - Ralph P. Grimaldi, Pearson Education,
2. Discrete Mathematics and its Applications - Kenneth H. Rosen, McGraw Hill.
3. Discrete Mathematical Structures with Applications to Computer Science - Tremblay and Manohar , McGraw-Hill Publications.
4. A Treatise on Discrete Mathematical Structures– JayantGanguly, Sanguine-Pearson.
5. Discrete Mathematical Structures –Dr.D.S.Chandrashekaraiiah.

HC**OPERATING SYSTEM****3:1:0****Objectives:**

- Understand the fundamental principles of operating system, processes and their communication.
- Understand the concepts of process management.
- Understand the concepts of Memory Management.
- Know the concepts of filesystems and the disk management in Operating Systems.

Outcome:

Students will be able to:

- Understand the usage of the operating system components and its services.
- Employ the concepts of process management.
- Employ the concepts of Memory Management
- Apply the file handling concepts in OS perspective.

Unit I

Introduction -Computer System Organisation – Computer system architecture – Operating system operations - Operating systems services-System calls- Types of system calls – Operating system structure.

Processes-process concept- process scheduling-operation on processes.Multithreaded programming – Multithreading models – Threading issues.

Unit II

Process Scheduling - Scheduling criteria-Scheduling algorithms – Thread scheduling - Multiple-processor Scheduling.

Process Synchronization – Critical Section problem – Peterson’s solution - Semaphores-Classical problems of synchronization - critical regions – Introduction to Monitors.

Unit III

Deadlocks – System model - Deadlock Characterization - Deadlock handling - Deadlock Prevention - Deadlock avoidance - Deadlock Detection - Deadlock Recovery.

Memory Management – Swapping - Contiguous Memory allocation -Segmentation Paging.

Virtual Memory Management - Demand paging – Copy on write - Page Replacement - Thrashing.

Unit IV

File System – File concept – Access methods – Directory structure – Directory and disk structure - File Systems structures - Directory Implementation - Allocation Methods - Free Space management.

Disk Structures – Disk attachment - Disk Scheduling – Disk management.

References:

1. Operating Systems Concepts - Abraham Silberschatz Peter B Galvin, G.Gagne, 9thEdition, John Wiley & Sons.
2. Modern operating Systems-Andrew S.Tanenbaum, Third Edition, PHI Learning Pvt. Ltd.
3. Operating Systems: A Concept-based Approach - D M Dhamdhare, Second Edition, Tata McGraw-Hill Education
4. Operating Systems-H M Deital, P J Deital and D R Choffnes3rd edition, Pearson Education
5. Operating Systems: Internals and Design Principles-William Stallings, Seventh Edition, Prentice Hall,

HC**FUNDAMENTALS OF DATA STRUCTURES****3:0:1****Objectives:**

- Impart the basic concepts of data structures and algorithms
- Understand concepts about searching and sorting techniques
- Know the basic concepts about stacks, queues, lists, trees and graphs
- Have knowledge of trees and graphs concepts

Outcomes:

Students will be able to:

- Analyse algorithms and algorithm correctness.
- Summarize searching and sorting techniques
- Describe stack, queue and linked list operation.
- Solve the problems writing algorithms by using fundamental data structures

Unit I

Introduction – Need for data structures, classification of data structures, Introduction to algorithm- Sequential, Selection and Iteration, Algorithmic notations, Concept and terminology for non-primitive Data structures.

Arrays- Memory Representation of 1D and 2D, Operations on Arrays.

Stacks- Definitions and Concepts, Operations on stacks, Applications of stacks- Recursion, Infix to postfix, and Evaluating postfix expressions.

Unit II

Queues- Linear, Circular and Priority Queues, Operation on queues, applications.

Linked list: Pointers and Linked Allocation, Linked linear lists, Operations on Linear lists.

Circular linked lists- Memory Representation.

Doubly linked linear lists- Memory Representation.

Unit III

Nonlinear Data Structures.

Trees - Definition and concepts, Operations on Binary Trees, Storage Representations of Binary Trees- Sequential and Linked, Tree Traversal, Binary Search Tree- Creation and Traversal.

Unit IV

Sorting and searching.

Sorting- Selection sort, Bubble Sort, Insertion Sort, Merge Sort, Quick Sort, Radix sort.

Searching- Sequential and Binary searching.

References:

1. An Introduction to Data Structures with Applications 2nd edition - J.P.Trembly and Sorenson, McGraw Hill.
2. Data structures using C , Aaron M Tenenbaum, YedidyahLangsam, Pearson
3. Data Structures And Program Design In C, Robert L Cruse, Pearson
4. Systematic Approach to Data Structures Using C by Padma Reddy

HC**DATABASE MANAGEMENT SYSTEM****3:0:1****Objectives:**

- Understand the different issues involved in the design and implementation of a database system.
- Study the physical and logical database designs, database modelling, relational, hierarchical, and network models.
- Understand and use data manipulation language to query, update, and manage a database.
- Design and build a simple database system and demonstrate competence with the fundamental tasks involved with modelling, designing, and implementing a DBMS.

Outcome:

Students will be able to:

- Describe the database architecture and system concepts.
- Employ the techniques of SQL in Relational database.
- Implement simple database system by utilising Data models and schema.
- Employ normalization techniques to overcome Database anomalies.

Unit I

Introduction to Database System Concepts and Architecture, Databases and Database Users, Characteristics of the Database Approach, Actors on the Scene, Advantages of Using a DBMS.

Data Models, Schemas and Instances, DBMS Architecture and Data Independence, Database Languages and Interfaces, The Database System Environment. Data Modeling Using the Entity-Relationship Model.

Entity Types, Entity Sets, Attributes, and Keys, Relationship Types, Relationship Sets, Roles, and Structural Constraints, Weak Entity Types, ER Diagrams, Naming Conventions and Design Aspects.

Unit II

SQL-The Relational Database Standard.

Data Definition, SQL Data Types and Schemas, Constraints, Basic Queries in SQL, Insert, Delete, and Update Statements in SQL, Set Operations, Aggregate functions, Views (Virtual Tables) in SQL, Joins – Inner, Outer and Self, Additional Features of SQL, DCL-commit, Rollback, Save-point, Grant privileges.

Unit III

Relational Data Model Relational Constraints, and Relational Algebra. Relational Model Concepts, Relational Model Constraints and Relational Database Schemas, Basic Relational

Algebra Operations, Additional Relational Operations, Examples of Queries in Relational Algebra.

Unit IV

Normalization- Functional Dependencies, Transitive and Multivalued dependency, First Normal form, Second Normal Form, Third Normal Form and Boyce Codd Normal Form, Advantages of RDBMS- Codd's Rules.

Transaction- Concepts, States, ACID properties, Concurrent executions and Serializability.

References:

1. Fundamentals of Database Systems -Navathe and Elmasri –Pearson Education, Fifth Edition.
2. Database Systems Concepts, 3rd edition - Abraham Silberschatz, Henry Korth and S. Sudarshan McGraw Hill International Editions.
3. Introduction to Database systems - CJ Date, Published by Addison-Wesley.
4. Principles of database systems - Ullman, Computer Science press.

HC**OBJECT ORIENTED PROGRAMMING WITH C++****3:0:1****Objectives:**

- Understand how C++ improves C with object-oriented features.
- Learn how to write various C++ functions efficiently.
- Learn the concepts of extended Object oriented programming
- Understand the concepts of files and I/O operations

Outcome:

Students will be able to:

- Employ the syntax and semantics of the C++ programming language.
- Use function prototyping and different methods involved in function implementation.
- Implement extended Object oriented programming techniques.
- Describe and implement the significance of files and I/O operations.

Unit I : Introduction

Procedure-oriented programming, Concepts of Object-oriented programming, benefits of OOP, Applications of OOP, Structure of C++ program.

Tokens, Keywords, Identifiers and constants, Basic Data Types, User-defined data types, Derived data Types, Symbolic constants, Type compatibility, Declaration of variables, Dynamic initialization of variables, Reference variables, Operators in C++, Scope resolution operator, Member dereferencing operators, Memory management operators, Manipulators, Type cast operator, Expressions and their types, Special assignment expressions, Implicit conversions, Operator overloading, Operator precedence, Control structures.

Unit II : Functions

The main function, Function prototyping, Call by Reference, Return by Reference, Inline functions, Default arguments, const arguments, Function overloading, Friend and Virtual functions.

Classes and Objects

Specifying a Class, Defining member functions, Making an Outside function Inline, Nesting of member functions, Private member functions, Arrays within a Class, Static data members, Static member functions, Arrays of Objects, Objects as function arguments, friendly functions, Returning Objects, const member functions, Pointers to members.

Constructors and Destructors

Constructors, Parameterized constructors, Multiple constructors in a class, Constructors with default arguments, Dynamic initialization of objects, Copy constructor, Dynamic constructor, Constructing Two-dimensional arrays, const Objects, Destructors.

Unit III : Operator Overloading and Type Conversions

Defining operator overloading, Overloading unary operators, Overloading Binary operators, Rules for overloading operators, Type conversions.

Inheritance and Polymorphism: Introduction, defining derived classes, single inheritance, making a private member inheritable, multilevel inheritance, hierarchical inheritance, hybrid inheritance, virtual base classes, abstract classes, constructors in derived classes, polymorphism – introduction, pointers, pointers to objects, this pointers, pointers to derived classes, virtual functions, pure virtual functions.

Unit IV : Console I/O Operations, Files and Templates

C++ streams, C++ stream classes, Unformatted I/O operations, Formatted I/O operations, managing output with manipulators.

Files: Classes for file stream operations, opening and closing a file, detecting end of file, more about open(): file modes, file pointers and their manipulations, sequential input and output operations.

Templates: Function templates and Class templates

References:

1. Object Oriented Programming with C++ - E. Balagurusamy.
2. Object Oriented Programming with C++ - M.T. Somashekara, D.S. Guru, H.S. Nagendraswamy, K.S. Manjunatha, PHI Learning, New Delhi.
3. Object Oriented Programming in C++ - Robert LaforeTechmedia Publication.
4. The complete reference C – Herbert shieldt Tata McGraw Hill Publication.

HC**ADVANCED SOFTWARE ENGINEERING****3:1:0****Objectives:**

- Understand the importance of domain knowledge and its work around.
- Know the importance team work and stewardship.
- Analyze and implement solutions to complex problems involving computers.
- A solid understanding to the methods of modern software engineering.

Outcome:

Students will be able to:

- Work in one or more significant application domains.
- Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.
- Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle.
- Demonstrate an ability to use the techniques and tools necessary for engineering practice

UNIT I: Requirements

Introduction - Professional and ethical responsibility. Critical systems: Systems dependability, availability, reliability, safety and security. Software processes: Software process models, process iteration, process activities, Project Management: Management activities, project planning and project scheduling. Requirement - Software requirements: Functional and non-functional requirements, user and system requirement. System models: Context, behavioural, data, object and structural method models.

UNIT II: Design

Architectural Design: System organization and control styles. Distributed systems architectures: client-server architectures and Distributed object architectures. Application architectures: Data processing systems and Transaction processing systems. User interface design: Design issues, UI design process, user analysis and interface evaluation.

UNIT III: Development

Rapid software development: Extreme programming, Rapid application development and software prototype. Critical systems development: Dependable processes, Dependable programming, Fault tolerance and Fault-tolerant architecture.

UNIT IV: Verification and Validation

Verification and Validation: Planning verification and validation and Software inspection. Software testing: System testing, Component testing, Test Case design and test automation.

Critical system validation: Reliability validation, Safety assurance and Security assessment.
Software cost estimation: Software productivity and estimation technique. Quality management:
Process and product quality.

References:

1. Software Engineering - Ian Sommerville, 8th Edition, Pearson Education Ltd.,
2. Software Engineering – A practitioners approach, Roger. S. Pressman, Tata-McGraw Hill 6th Edition.
3. Fundamentals of software engineering - Rajib Mall, Phi learning Pvt. Ltd, 3rd edition.

HC**JAVA PROGRAMMING****3:0:1****Objectives:**

- Gain knowledge about basic of Java language syntax and semantics.
- Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms.
- Gain knowledge on multi-threads programming, applet programming and Graphics Programming.
- Understand networking concepts and connecting Java application with database of Java.

Outcomes:

Students will be able to:

- Identify classes, objects, members of a class and relationships among them needed for a specific problem.
- Write Java programs to implement error handling techniques using exception handling
- Demonstrate the concepts of applet and graphics programming.
- Develop a java application to connect with database using JDBC connectivity.

Unit I: Introduction to Java

Origin and features of Java. Java Program Structure, Java Tokens, Java statements, Java Virtual machine, Command Line Parameters, Java Variables and Data Types, Operators, Decision Making, Branching and looping statements.

Classes, Objects and Methods used in Java: Class fundamentals, Methods, Constructors, Overloading, Inheritance, Interfaces, One and two dimensional arrays, Vectors, Strings, Wrapper Classes.

Unit II: Java Packages

API packages, system packages, naming conventions, creating and accessing a package, adding a class to a package, hiding classes.

Multi-threads Programming: Java thread Model, Main Thread, creating a Thread, Creating Multiple Threads, Extending the thread class, Stopping and blocking a thread, Life cycle of a thread, Managing Errors and Exceptions.

Unit III: Applet Programming

Introduction, how applet differs from application, Applet life cycle, Applet tag, passing parameters to applet. Abstract Windows Toolkit: Components, Container, Panel, Label, Button, Checkbox, Checkbox Group, Choice, List, Text Field, Text Area, Scrollbars.

Graphics Programming: The Graphics class, Lines and Rectangles, Circles and Ellipses, Drawing Arcs, Drawing Polygons, Line Graphs, Using Control Loops in Applets.

Unit IV: Managing Input/output Files in Java

Stream Classes, Byte Stream Classes, Character Stream Classes, Creation of Files, Reading/Writing characters, Reading/Writing Bytes, Handling Primitive Data Types, Concatenating and Buffering Files, Random Access Files.

Networking: InetAddress, TCP/IP Client Sockets, TCP/IP Server Sockets, URL, URLConnection, JDBC connectivity

Reference Books:

1. Programming with Java – A PRIMER by E.Balagurusamy, Tata McGraw-Hill 3rd Edition
2. The Complete Reference - Java-2 by Patrick Naughton and Herbert SchildPublished by Tata McGraw-Hill India.
3. The Complete Reference – J2EE by Jim Keogh, published by Tata McGraw-Hill.

HC**WEB PROGRAMMING****2:0:2****Objectives:**

- Understand the fundamentals concepts of Web programming.
- Know the different techniques involved in Cascading Style Sheets (CSS).
- Learn to implement the concepts of JavaScript.
- Learn scripting with Perl building blocks.

Outcomes:

Students will be able to:

- Apply a structured approach to identifying needs, interests, and functionality of a website.
- Modify existing HTML, CSS, and JavaScript code to extend and alter its functionality, and to correct errors.
- Use JavaScript to add dynamic content to pages.
- Write scripts using the fundamental Perl building blocks.

UNIT I: Fundamentals of Web

Internet, WWW, Web Browsers, and Web Servers; URLs; MIME; HTTP; Security; the Web Programmers Toolbox. HTML: Origins and evolution of HTML; Basic syntax; Standard HTML document structure; Basic text mark-up, Hypertext Links; Lists; Tables; Forms; Frames.

UNIT II: Cascading Style Sheets (CSS)

Introduction; Levels of style sheets; Style specification formats; Selector forms; Property value forms; Font properties; List properties; Color; Alignment of text; The Box model; Background images; Redefining Tags.

UNIT III: JavaScript

Overview of JavaScript; Object orientation and JavaScript; General syntactic characteristics; Primitives, operations, and expressions; Screen output and keyboard input; Control statements; Object creation and modification; Arrays; Functions; Constructor; Pattern matching using regular expressions; Errors in scripts; Examples.

UNIT IV: Perl and CGI Programming

Origins and uses of Perl, Scalars and their operations, Assignment statements and simple input and output, Control statements, Fundamentals of arrays, Hashes, References, Functions, Pattern matching, File input and output; Examples.

Using Perl for CGI Programming: The Common Gateway Interface; CGI linkage; Query string format; Cookies.

References:

1. Programming the World Wide Web – Robert W. Sebesta, 4th Edition, Pearson Education.
2. Internet & World Wide Web How to H program – M. Deitel, P.J. Deitel, A. B. Goldberg, 3rd Edition, Pearson Education / PHI.
3. Web Programming Building Internet Applications – Chris Bates, 3rd Edition, Wiley India.
4. The Web Warrior Guide to Web Programming – Xue Bai et al, Thomson.

HC**ANALYSIS AND DESIGN OF ALGORITHMS****2:1:1****Objectives:**

- Introduce basic concepts of algorithms.
- Learn mathematical aspects and analysis of algorithms.
- Understand sorting and searching algorithms.
- Implement different algorithm design methods.

Outcomes:

Students will be able to:

- Model, and analyze a given problem as an algorithm.
- Investigate whether the algorithm found is the most efficient.
- Formulate the space needs, time order analysis for the implementation of an algorithm.
- Apply appropriate approximation algorithms for P and NP type problems.

Unit I

Algorithms- Analysis, Design, Complexity Analysis, Analysis and Profiling, Expressing in Order notations, Establishing Bounds, Iterative and Recursive algorithms, Review of Data Structure based algorithms, Sets-Union and Intersection, Matrices, Binary tree structures, Heaps-check, insertion, creation, deletion, sorting, Case studies- Base conversion, Prime and Fibonacci numbers, Sorting Algorithms- Selection, Exchange, Insertion, Greater Common Divisor, Least Common Multiple.

Unit II

Divide and Conquer- Binary search, Max-Min search, Merge sort, Quick sort, Transfer and Conquer – solution to simultaneous equations by triangularization, diagonalization algorithms.

Unit III

Greedy Algorithms- Tape filling, Knapsack, Job sequencing, Optimal merge pattern, Single source shortest paths, Minimum spanning trees-Kruskal's algorithm, Prim's algorithm.

Dynamic Programming – multistage graphs, all pairs shortest paths, Traveling salesman problem, 0/1 Knapsack problem

Unit IV

Search and Traversal: BFS; DFS, Backtracking method- 8-queen Problem, sum of subsets problem, Branch and Bound method – 0/1 knapsack problem, traveling salesman problem.

Complexity issues- P type, NP type, two stage algorithm approach for NP problem

References:

1. Computer Algorithms by Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran

2. How to solve it by Computer by R.G.Dromey
3. Introduction to the Design & Analysis of Algorithms by Anany V. Levitin
4. Introduction to Algorithms by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein.

HC**PYTHON PROGRAMMING****3:0:1****Objectives:**

- Introduce the basic concepts Python programming.
- Understand programming paradigms brought in by Python with a focus on Regular Expressions, List and Dictionaries.
- Understand the concepts of image processing.
- Know the techniques of Data mining.

Outcomes:

Students will be able to:

- Apply the basic concepts of Python programming.
- Impart the Hands on Regular Expression, Text Processing scripts and file handling scripts.
- Implement Python for Data and Image processing.
- Get hands on experience of Cluster Analysis using Python.

Unit I

Python Fundamentals: Introduction, Python Objects, Built-in Functions, Numbers and Strings, Conditionals and Loops, Functions, Passing Arguments, String Functions

Operators, Built-in Functions, List Type Built-in Methods, Special Features of Lists, Tuples, Tuple Operators and Built-in Functions, Special Features of Tuples File Objects, File Built-in Function, File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules

Unit II

Regular Expressions: Introduction/Motivation, Special Symbols and Characters for REs, REs and Python. Dictionaries: Introduction, Operators, Built-in Functions, Built-in Methods, Dictionary Keys.

Data Processing : Storing in List and Strings, Dispersion, Central Tendency, Mean Median Mode, Frequency Distribution, Standard Deviation Using Files for large dataset, statistics with real data, reading data from internet, Accessing Stock Market Data, Correlating Stock data

Unit III

Image Processing and Data Mining : Introduction, RGB Color Model, Object for Image Processing, Image Processing (Negative Images, Gray Scale, Resizing, Stretching, Flipping, Edge Detection)

Unit IV

What is Data Mining? Implementing Cluster Analysis on Simple Data, Distance between two points, Clusters and Centroids, File Processing, Visualization.

References:

1. Core Python Programming - Chun, J Wesley, Second Edition, Pearson.
2. Python Programming in Context -Bradley N Miller, David L Ranum, Second Edition.
3. Head First Python - Barry, Paul, 2nd Edition, O Reilly.
4. Learning Python, - Lutz, Mark, 4th Edition, O Reilly.
5. The Python Tutorial at <https://docs.python.org/3/tutorial/index.html>
6. Beginners Guide to Python at <https://wiki.python.org/moin/BeginnersGuide>

HC**LINUX PROGRAMMING****3:0:1****Objectives:**

- Understand and make effective use of Linux utilities and Shell scripting language (bash) to solve Problems.
- Implement in C some standard Linux utilities such as ls, mv, cp etc. using system calls.
- Develop the skills necessary for systems programming including file system programming, process and signal management, and inter-process communication.
- Develop the basic skills required to write network programs using Sockets.

Outcomes:

Students will be able to:

- Work confidently in Linux environment.
- Work with shell script to automate different tasks.
- Write simple system programs involving file and process management.
- To write simple socket programs.

Unit I

A brief history of Unix and Linux, Architecture, Features.

Unix/Linux Shell :

Linux shell commands for getting help: Commands for getting help :whatism, man, info, apropos.

Useful unix/linux shell commands :pwd, whoami, who, ls, env, echo, history, passwd, cat, more, less, file, chmod, chown, cp, mv, mkdir, rmdir, whereis, which, locate, ln.

Quick overview of basic Linux Utilities: File handling utilities, links: hard and symbolic links, Security by file permissions, Process utilities, Disk utilities, Networking commands, Filters: grep, Text processing utilities and Backup utilities.

Shell programming with Bourne again shell(bash)- Introduction, shell responsibilities, tab completion, pipes and Redirection, here documents, running a shell script, the shell as a programming language, shell meta characters, file name substitution, shell variables, command substitution, shell commands, the environment, quoting, test command, control structures, arithmetic in shell, shell script examples.

Unit II

Sed and Awk:Sed: Scripts, Operation, Addresses, Commands.

Awk: Execution, Fields and Records, Scripts, Operation, Patterns, Actions, Associative Arrays, String and Mathematical functions, System commands in awk, Applications.

System Calls:

Files and Directories: File Concept, File types, File System Structure, file metadata: inodes, kernel support for files, system calls for file I/O operations: open, create, read, write, close, lseek, dup2, file status information: stat family, fcntl, file permissions: chmod, fchmod, file ownership: chown, lchown, symbolic and hard links: symlink, link, unlink.

Directories: Creating, removing and changing Directories: mkdir, rmdir, chdir, obtaining current working directory: getcwd, Directory contents, Scanning Directories: opendir, readdir, closedir, rewinddir functions.

Unit III

Process : Process concept, Layout of a C program image in main memory. Process environment :environment list, environment variables, getenv, setenv, Kernel support for process, process identification, process control : process creation, replacing a process image, waiting for a process, process termination, zombie process, orphan process, system call interface for process management-fork, vfork, exit, wait, waitpid, exec family, Process Groups, Sessions and Controlling Terminal, Differences between threads and processes.

Unit IV

Interprocess Communication: Introduction to IPC, IPC between processes on a single computer system, IPC between processes on different systems, pipes-creation, IPC between related processes using unnamed pipes, FIFO: creation, IPC between unrelated processes using FIFOs(Named pipes), differences between unnamed and named pipes, popen and pclose library functions.

Sockets: Introduction to Berkeley Sockets, IPC over a network, Client-Server model, Socket address structures (unix domain and Internet domain), Socket system calls for connection oriented protocol and connectionless protocol, example: client/server programs-Single Server-Client connection, Comparison of IPC mechanisms.

References:

1. Linux “man” pages and “info” pages.
2. The Linux Documentation Project : <http://www.tldp.org/>
3. Unix Concepts and Applications- Sumitabha Das, 4th Edition, TMH.
4. Beej's Guide to Network Programming : <https://beej.us/guide/bgnet/>
5. System Programming using C++ - T. Chan, Unix PHI.
6. Unix Network Programming - W. R. Stevens , PHI.
7. Beginning Linux Programming -N. Mathew, R. Stones, 4th Edition, Wrox, Wiley India Edition.
8. C Programming Language -Kernighan and Ritchie, PHI.

SC**COMPUTER ORGANIZATION AND ARCHITECTURE****4:0:0****Objectives:**

- Understand the organization of a computer and its principal components.
- Understand the design components of a digital subsystem that required realizing various components such as ALU, Control, etc.
- Understand the memory organization and I/O interface.
- Understand the CPU organization and Computer Arithmetic.

Outcomes:

Students will be able to:

- Acquire knowledge and understand the theory of Digital Design and Computer Organization to provide an insight of how basic computer components are organized.
- Understand the functions of various hardware components and their building blocks.
- Gain in-depth understanding of realization of different combinational / sequential circuits.
- Understand memory hierarchy and design of primary memory.

Unit I: Data and numbers

Data and number representation- binary-complement representation, BCD-ASCII, conversion of numbers from one number system to the other, $(r-1)$'s & r 's complement representation. Binary Arithmetic, Boolean Algebra and Logic Gates, Fundamentals of Boolean algebra, Logic gates (AND, OR, NOT, XOR, NAND, NOR) MINTERM, MAXTERM, truth table, Boolean expression, simplification, Boolean Algebra, K-map up-to 4 variable, Canonical Forms.

Unit II: Combinational Circuits

Adder, subtractor, BCD adder, multiplexer, De-multiplexer, encoder, decoder, Sequential Circuits, Flip-Flop (SR, JK, D, T, Master-slave), Application of flip-flop-- Asynchronous counter up-to 4 bit, decade counter, mod-n-counter, Synchronous counter—ring counter, Johnson's count, Up down counter, Register.

Unit III: Memory Organization and I/O Interface

Types of memory-RAM, ROM, EPROM, DRAM, SRAM, Addressing Modes, Associative memory, main memory, virtual memory, Cache memory, secondary memory.

I/O: I/O interface, polling, interrupts, DMA, mode of data transfer.

Unit IV: CPU Organization and Computer Arithmetic

CPU organization, instruction format, addressing mode, RISC, CISC, Von- Neumann Architecture Pipeline & vector processing, Pipeline structure, speedup, efficiency, throughput and bottlenecks, Arithmetic pipeline and Instruction pipeline.

Reference Books:

1. Computer System Architecture - Morris Mano, PHI
2. Computer Architecture - Carter, Schaum Outline Series, TMH
3. Computer Organization - Hamacher, MGH
4. System Architecture - Buad, VIKAS
5. The Fundamentals of Computer Organization - Raja Rao, Scitech

SC**COMPUTER GRAPHICS****2:1:1****Objectives:**

- Provide an overview of various device level algorithms.
- Understand the homogeneous coordinates and various 2D and 3D transformations
- Understand 3D concepts like projections, curves.
- Know how to implement the computer graphics concepts using OpenGL.

Outcomes:

Students will be able to Acquire knowledge and understanding of:

- The structure of an interactive computer graphics system, and the separation of system components.
- Device level algorithms that renders various shapes and clipping operations.
- 2D and 3D geometrical transformations and viewing.
- Techniques for representing 3D geometrical objects.

Unit I

Graphics hardware: Video display devices, Raster-scan systems, Graphics software : Coordinate representations, Graphics functions, standards, Introduction to OpenGL.

Graphics Output Primitives: Coordinate reference frames, Two-Dimensional reference frame in OpenGL, OpenGL Point Functions, Line Functions, Curve functions.

Scan-Conversion : Line-Drawing Algorithms: DDA, Bresenham's, Setting frame-buffer values, Circle-Generating algorithms : Midpoint Circle Algorithm.

Unit II

Scan conversion for solids: Scan-line polygon fill algorithm, Boundary fill algorithm, Flood fill algorithm, Inside-outside tests.

2D geometrical transformations: Basic two-dimensional geometric transformations, Homogeneous Coordinates and Matrix Representation, Inverse Transformations, Brief overview of Composite transformations, Reflection, Shear, OpenGL functions for two-dimensional geometric transformations, Programming examples.

Unit III

2D viewing: Windows and viewports, Two-dimensional viewing pipeline, clipping window, Normalization and viewport transformations, Brief overview of OpenGL 2D viewing functions.

2D Clipping Algorithms: Point clipping, Line clipping: Cohen- Sutherland and Liang-Barsky Line clipping, polygon fill-area clipping: Sutherland-Hodgman algorithm, Text clipping.

3D geometrical transformations: 3D translation, 3D scaling. 3D rotation: coordinate-axis rotations, general 3D rotations, Other 3D transformations, Affine transformations, OpenGL geometric transformation functions.

Unit IV

Three-dimensional viewing: Overview, Three-dimensional viewing pipeline, Projection transformations, Parallel and Perspective projection matrices. 3D viewing functions.

Spline representations : Interpolation and Approximation splines, parametric and Geometric continuity conditions, Bezier spline curves, B-Spline curves.

References

1. Computer Graphics with OpenGL, Fourth Edition - Donald D. Hearn, M. Pauline Baker, Warren Carithers, Pearson India Education Services.
2. Computer Graphics Principles & Practice in C - Foley, Vandam, Feiner, Hughes, Pearson Education, 2001.
3. Open GL Super Bible: Comprehensive Tutorial and Reference, -Richard S Wright and Jr. Michael Sweet, 7nd Edition, Pearson Education.
4. Computer Graphics- Roy A. Plastock, Gordon Kalley, Schaum's Outlines, McGraw Hill
5. Computer Graphics - Steven Harrington, 2nd Edition (Paperback), Tata McGraw Hill

SC**DATA COMMUNICATION AND NETWORKS****3:1:0****Objectives:**

- Understand the basics of data communication components.
- Learn the protocols of Data link layer.
- Understand different network layer services and routing protocols
- Know the different techniques involved transport layer and application layer

Outcomes:

Students will be able to:

- Acquire knowledge on basics of Data communication components.
- Understand the usage of different protocols of Data link layer.
- Working of network layer and routing protocols.
- Gain In-depth knowledge in the different concepts involved in transport layer and application layer.

UNIT – I: Data Communications

Components – Direction of Data flow – Networks – Network Types, TCP/IP Protocol suite, OSI model, Multiplexing, Transmission media, Circuit Switched Networks.

UNIT – II: Data link layer

Introduction, Framing, Data Link Layer protocols, Flow and error control, Medium Access Sub Layer: ALOHA, CSMA/CD, Wired LAN – Ethernet, Wireless LAN – IEEE 802.11

UNIT – III: Network layer

Services, Packet Switching, Unicast Routing protocols, Multicast routing protocols.

UNIT – IV: Transport Layer and Application Layer

UDP and TCP protocols, Application Layer: client/server programming, WWW, HTTP, FTP, Telnet, email, SSH, DNS.

References:

1. Data Communications and Networking - Behrouz A. Forouzan, Fourth Edition, TMH.
2. Computer Networks - Andrew S Tanenbaum, 5th Edition. Pearson Education, PHI.
3. Data communications and Computer Networks - P.C .Gupta, PHI.
4. An Engineering Approach to Computer Networks - S. Keshav, 2nd Edition, Pearson Education.
5. Understanding communications and Networks, 3rd Edition, W.A. Shay, Cengage Learning.
6. Computer Networking: A Top-Down Approach Featuring the Internet - James F. Kurose & Keith W. Ross, 3rd Edition, Pearson Education.
7. Data and Computer Communication- William Stallings, Sixth Edition, Pearson Education.

SC**FUNDAMENTALS OF IOT TECHNOLOGY****3:1:0****Objectives:**

- Learn the impact of IoT applications and architectures in real world.
- Illustrate the various methods of deploying smart objects and connect them to network.
- Infer the role of data analytics in IoT.
- Understand the role of IoT in Smart and Connected Cities and Public Safety.

Outcomes:

Students will be able to:

- Interpret the impact of IoT networks in new architectural models.
- Compare and contrast the deployment of smart objects and technologies to connect them as network.
- Elaborate the need of data analytics in IoT.
- Identify the application of IoT in Smart and Connected Cities and Public Safety.

Unit I: Basics of IoT

What is IoT?, Genesis of IoT, IoT and Digitization, IoT Impact, Convergence of IT and OT, IoT Challenges, IoT Network Architecture and Design, Drivers Behind New Network Architectures, Comparing IoT Architectures, A Simplified IoT Architecture, The Core IoT Functional Stack, IoT Data Management and Compute Stack.

Unit II: Smart Objects and Access Technologies

Smart Objects: The “Things” in IoT, Sensors, Actuators, and Smart Objects, Sensor Networks, Connecting Smart Objects, Communications Criteria, IoT Access Technologies (Any Three)

Unit III: Data Analytics for IoT

Data and Analytics for IoT, An Introduction to Data Analytics for IoT, Machine Learning, Big Data Analytics Tools and Technology, Edge Streaming Analytics, Network Analytics.

Unit IV: IoT in Industry

IoT in Industry: Smart and Connected Cities-An IoT Strategy for Smarter Cities, Smart City IoT Architecture, Smart City Security Architecture, Smart City Use-Case Examples-Smart Traffic Control.

Public Safety-Overview of Public safety, An IoT Blueprint for public safety, Emergency Response IoT Architecture, IoT Public Safety Information Processing, School Bus Safety.

References:

1. IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things- David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, 1st Edition, Pearson Education.
2. Internet of Things- Srinivasa K G, CENGAGE Learning India.
3. Internet of Things (A Hands-on-Approach)-Vijay Madiseti and ArshdeepBahga, 1stEdition, VPT.
4. Internet of Things: Architecture and Design Principles - Raj Kamal,1stEdition, McGraw Hill Education.

SC**COMMUNICATION SKILLS****3:1:0****Objectives:**

- Know how communication style influences how we are perceived by others.
- Learn the factors governing good communication.
- Understand How good communication skills can be developed.
- Know how to use effective communication skills in business.
- Learn the need to modify communication depending on business situation and circumstances.

Outcomes:

Students will be able to:

- Apply knowledge of human communication and language processes as they occur across various contexts, e.g., interpersonal, intrapersonal, small group, organizational, media, gender, family, intercultural communication, technologically mediated communication, etc. from multiple perspectives.
- Evaluate key theoretical approaches used in the interdisciplinary field of communication. i.e., students will be able to explain major theoretical frameworks, constructs, and concepts for the study of communication and language, summarize the work of central thinkers associated with particular approaches, and begin to evaluate the strengths and weaknesses of their approaches.
- Find, use, and evaluate primary academic writing associated with the communication discipline.
- Communicate effectively orally and in writing.

Unit – I

Importance of communication, its basic model, formal and informal communications, barriers to communication, feedback and its effectiveness, Non- Verbal communication - Etiquettes.

Unit – II

Oral communication, Speaking: Paralanguage: Sounds, stress, intonation- Art of conversation – Presentation skills, – Public speaking- Expressing Techniques, importance of listening, role of visual aids, persuasive communication.

Unit – III

Written communication – Effective writing – Paragraph – Essay- Reports – Letters- Articles – Notices, Agenda & Minutes.

Unit – IV

Interview skills: Types of Interviews – Preparing for interview – Preparing a CV – Structuring the interview- Mock Interview - Quick Tips.

References:

1. Soft skill: know yourself & Know the world- Dr. Alex K..
2. Communication for results –C Hamilton & Parker
3. Instrument of Communication – P Meredith.
4. Basic Management skills for all – E H McGrath.
5. Managerial Communication – P M Timm.
6. Thesis and Assignment writing – Anderson.

SC**MOBILE APPLICATION DEVELOPMENT WITH ANDROID****2:1:1****Objectives:**

- Understand the concepts of mobile applications.
- Learn to design mobile applications
- Learn android application development environment.
- Gain knowledge on Google maps and publishing android applications

Outcome:

Students will be able to:

- Acquire knowledge on basics of mobile application development.
- Acquire knowledge on mobile application design patterns.
- Implement android application using android application environment.
- Students must independently develop android applications and publish them.

Unit I: Introduction to mobile applications:

Embedded systems - Market and business drivers for mobile applications – Publishing and delivery of mobile applications – Requirements gathering and validation for mobile applications, Basics of embedded systems design – Embedded OS - Design constraints for mobile applications, both hardware and software related – Architecting mobile applications – User interfaces for mobile applications – touch events and gestures.

Unit II: Advanced Design:

Designing applications with multimedia and web access capabilities Integration with GPS and social media networking applications – Accessing applications hosted in a cloud computing environment – Design patterns for mobile applications – Achieving quality constraints – performance, usability, security, availability and modifiability.

Unit III: Android Establishing the development environment:

Android architecture, Android Application structure, Emulator- Android virtual device, UI design, Fragments, Activity, Services, broadcast Receiver, Intents/Filters, Content provider- SQLite Programming, SQLite Open Helper, SQLite Database, Interaction with server side applications.

Unit IV: Advanced Android:

Using Google Maps, GPS and Wi-Fi Integration, Android Notification, Audio manager, Bluetooth, Camera and Sensor integration, Sending SMS, Phone Calls. Publishing Android Application.

References:

1. Professional Mobile Application Development - Jeff McWherter and Scott Gowell, Wrox.
2. Android in Practice - Charlie Collins, Michael Galpin and Matthias Kappler, DreamTech.
3. Beginning Objective C - James Dovey and Ash Furrow, Apress.
4. Android for programmers: An App-Driven Approach - Paul Deitel ,Harvey Deitel, Abbey Deitel and Michael Morgano, Pearson.

SC**CLOUD COMPUTING****3:1:0****Objectives:**

- Ability to understand various basic concepts related to Cloud Computing technologies.
- Demonstrate the architecture and concept of different cloud models: IaaS, PaaS, SaaS
- Learn cloud services for individuals.
- Understand the technologies for data security in cloud.

Outcomes:

Students will be able to:

- Demonstrate the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications.
- Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud.
- Identify the cloud services for the individuals
- Acquire the knowledge on the core issues of cloud computing such as security, privacy, and interoperability.

Unit I

Introduction: Cloud Computing in a Nutshell, Layers and Types of Clouds, Desired Formats of Cloud, Cloud Infrastructure Management, Challenges and Risks. Virtualization: Virtualization of Computing, Storage and Resources.

Unit II

Cloud Services: Introduction to Cloud Services IaaS, PaaS and SaaS.

Software as a Service (SaaS): Evolution of SaaS, Challenges of SaaS Paradigm, SaaS Integration Services, SaaS Integration of Products and Platforms, Business – to Business Integration, B2B Services.

Infrastructure As a Services (IaaS): Introduction, Background & Related Work, Virtual Machines Provisioning and Manageability, Virtual Machine Migration Services, VM Provisioning and Migration in Action, Provisioning in a Cloud Context.

Platform As a service (PaaS): Integration of Private and Public Cloud, Technologies and Tools for Cloud Computing, Resource Provisioning Services.

Unit III

Migrating into a Cloud: Cloud Services for Individuals, Cloud Services Aimed at the Mid-Market, Enterprise Class Cloud Offering, Migration.

Unit IV

Management and Monitoring: Accounts Monitoring, User profiles in Cloud, Resource Allocation and Pricing in Cloud.

Security: Introduction, Cloud Storage: from LANs to WANs, Technologies for Data Security in Cloud Computing, Security Concerns, Legal issues and Aspects, Securing the Private and Public Cloud Architecture.

References:

1. Cloud Computing: Principles and Paradigms - RajkumarBuyya, James Broberg, Andrzej M Goscinski, Wiley publication.
2. Cloud Computing: A Practical Approach - Toby Velte, Anthony Velte, McGraw-Hill Osborne Media.
3. Cloud Application Architectures: Building Applications and Infrastructure in the Cloud - George Reese, O'Reilly Publication.
4. Cloud Computing Explained: Implementation Handbook for Enterprises -John Rhoton, Recursive Press.

SC**ADVANCED JAVA****2:1:1****Objectives**

- Define JDBC and describe the various JDBC drivers
- List the advantages and explain the life cycle of a servlet
- Understand various types of properties in Java beans

Outcomes

Students will be able to:

- Develop component-based Java software using JavaBeans
- Develop server side programs in the form of servlets
- Implement Entity Java bean in stateless and stateful environment

Unit I: J2EE overview and JDBC

The ABC of Programming Languages, Taking Programming Languages up a notch, Distributive Systems – Real Time Transmissions, Software objects, Web services, The Tier – Clients, Resources and Components, J2EE Multi – Tier Architecture, Client tier implementation, Enterprise Application Strategy, A new Strategy, The Enterprise Application.

Unit II: Servlets

Introduction, Life cycle of servlet, A simple Java servlet, Anatomy of Java servlet – Deployment Descriptor, Reading Data from a client, Reading HTTP Request Headers, Sending Data to a client and writing the HTTP Response Header, Cookies and Tracking Sessions

Unit III: Java Server Pages

Introduction, JSP tags – Variables and Objects, Methods, Control statements, Loops, Tomcat, Request String, User Sessions, Cookies, Session objects

Unit IV: Enterprise JavaBeans

Introduction, EJB containers, classes and interfaces, Deployment Descriptors – Anatomy, Environment Elements, Referencing EJB and other resources, query element; Session Java Bean- Stateless and stateful, creating a session java bean; Entity Java Bean – Container Managed Persistence, Bean Managed Persistence; The JAR File

References:

1. The Complete Reference J2EE – Jim Keogh
2. Core and Advanced Java, Black Book - Dreamtech Press

SC**MACHINE LEARNING****2:1:1****Objective:**

- Understand basics of machine learning techniques.
- Learn to apply the techniques in the area of pattern recognition and data analytics.
- Understand the supervised and unsupervised machine learning algorithms.

Outcomes:

Students will be able to:

- Acquire the knowledge on basics of machine learning techniques.
- Implement different supervised and unsupervised machine learning algorithms.
- Choose appropriate techniques for real time problems

Unit I

Introduction to Machine Learning, types of machine learning, examples. Supervised Learning: Learning class from examples, VC dimension, PAC learning, noise, learning multiple classes, regression, model selection and generalization, dimensions of a supervised learning algorithm. Parametric Methods: Introduction, maximum likelihood estimation, evaluating estimator, Bayes' estimator, parametric classification.

Unit II

Dimensionality Reduction: Introduction, subset selection, principal component analysis, factor analysis, multidimensional scaling, linear discriminant analysis. Clustering: Introduction, mixture densities, k-means clustering, expectation-maximization algorithm, hierarchical clustering, choosing the number of clusters. Non-parametric: Introduction, non-parametric density estimation, non-parametric classification.

Unit III

Decision Trees: Introduction, univariate trees, pruning, rule extraction from trees, learning rules from data. Multilayer perceptron: Introduction, training a perceptron, learning Boolean functions, multilayer perceptron, backpropagation algorithm, training procedures.

Unit IV

Kernel Machines: Introduction, optimal separating hyperplane, v-SVM, kernel tricks, vertical kernel, defining kernel, multiclass kernel machines, one-class kernel machines. Bayesian Estimation: Introduction, estimating the parameter of a distribution, Bayesian estimation, Gaussian processes.

Introduction to Graphical Models.

References

1. Introduction to Machine Learning - E. Alpaydin. 2nded, MIT Press.
2. Machine Learning: A Probabilistic Perspective - K. P. Murphy, MIT Press.
3. Machine Learning in Action - P. Harrington , Manning Publications.
4. Pattern Recognition and Machine Learning - C. M. Bishop, Springer.
5. Machine Learning: An Algorithmic Perspective -S. Marsland,,1st Ed. Chapman and Hall.
6. Machine Learning T. Mitchell, McGraw-Hill.

SC**GRAPH THEORY****3:1:0****Objectives:**

- Have familiarity with the Graph and its application.
- Understand the Tree, circuit and their relation.
- Know how to represent the problem in matrix representation.
- Understand the directed and dual graph.

Outcomes:

Students will be able to:

- Demonstrate different matrix problem in Graph.
- Analyze and solve the different graph problems.
- Divide the problem into modules with their relation.

Unit I: Introduction of Graph, Paths and Circuits

Overview of graph, applications, Finite and Infinite Graphs, Incidence and Degree, Isolated Vertex, Pendant Vertex and Null Graph, Brief history of Graph Theory, Isomorphism, Subgraphs, A puzzle with multicolored cubes, Walks, Paths and Circuits, Connected Graphs, Disconnected Graphs and Components, Euler Graphs, Operations on Graphs, More on Euler Graphs, Hamiltonian path & circuits, Travelling salesman problem.

Unit II: Trees and Fundamental Circuits, Cut-sets and Cut-vertices

Trees, Properties of trees, Pendant vertices in a tree, Distance and Centers in Tree, Rooted and Binary trees, On counting trees, Spanning Trees, Fundamental Circuits, Finding all spanning trees of a Graph, Spanning trees in a weighted graph, Cut-sets, Properties of Cut-set, Cut-sets in graph, Fundamental circuits and cut-sets, Connectivity and separability, Network flows

Unit III: Planar and Dual Graphs, Matrix representation of graphs

Combinatorial Vs. Geometric Graphs, Planar Graphs, Kuratowski's Two Graphs, Different representations of planar graph, Detection of Planarity, Geometric Dual, Combinatorial Dual, More on Criteria of Planarity, Thickness and Crossings, Incidence matrix, Submatrices of $A(G)$, Circuit matrix, Fundamental circuit matrix and rank of B , An application to switching network, Cut-set matrix, Relationships among A_f , B_f , C_f , Path matrix, Adjacency matrix.

Unit IV: Directed graphs, Graph Theoretic algorithms and computer programs

Directed graphs, Types of diagraphs, Diagraphs and binary relations, Directed paths and connectedness, Euler Digraphs, Trees with Directed Edges, Fundamental circuits in Diagraphs, Matrices A , B and C of diagraphs, Adjacency matrix of a digraph, Algorithms, Some basic algorithms, Shortest-path algorithms, Depth-first search on graph.

References:

1. Graph Theory and Applications -N.Deo. Kluwer Academic Publishers Norwell, MA, USA.
2. Graph Theory and Applications -Harary. Academic Press Inc. U.S.
3. Algorithm Design, Addison- J. Kleinberg, E.Tardos, Wesley,2005

SC**DISTRIBUTED COMPUTING****3:1:0****Objectives**

- Get Exposure on both abstraction and details of file systems.
- Introduce concepts related to distributed computing systems.
- Focus on performance and flexibility issues related to systems design decisions.
- Current literature in distributed systems

Outcomes

Students will be able to:

- Demonstrate the basic principles of distributed computing
- Develop an idea about balancing techniques and agreement protocols
- Analyze the difference between distributed file system and distributed database

Unit- I:

Introduction to distributed systems (DS), Design goals, transparencies, fundamental issues, interconnection networks, Client server computing

Unit-II:

Naming and binding, Distributed co-ordination, Process synchronization, Inter-process communication

Unit-III:

Dead locks in distributed systems, Load Scheduling and balancing techniques, Agreement protocols

Unit-IV:

Distributed file system design, Distributed database system : A Case study

References

1. Distributed Systems: Principles and paradigms - Andrew S Tanenbaum and Maarten van Steen : PHI(2002)
2. Distributed Computing Systems - T.L. Casavant and M. Singhal, IEEE computing society press
3. Distributed algorithms and protocols - M. Raynal and J. Howlett , Wiley and Sons

SC**NUMERICAL ALGORITHMS****3:0:1****Objectives:**

- Introduce the steps involved in numerical computing and its characteristics.
- Understand different methods of numerical integration and Ordinary Differential Equations.
- Learn different methods of solving simultaneous equations.
- Learn different interpolation and statistical methods.

Outcome:

Students will be able to:

- Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions.
- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Derive numerical methods for various mathematical operations and task such as solution of nonlinear equations, numerical integration and ordinary differential equations.

Unit – I**Introduction to Numerical Computing**

Introduction, Numeric Data, Analog Computing, Digital Computing, Process of Numerical Computing and Characteristics of Numerical Computing.

Approximations and Error in Computing

Introduction, Significant Digits, Inherent Errors, Numerical Errors, Modelling errors, Blunders, Absolute and relative Errors, Blunders and Error Propagation.

Roots of Nonlinear Equations

Bisection method, False position method, Newton Raphson method and Secant method.

Unit – II**Numerical Integration**

Trapezoidal rule, Simpson's $1/3^{\text{rd}}$ rule and Simpson's $3/8^{\text{th}}$ rule.

Ordinary Differential Equations

Euler's method, Modified Euler's method, Runge-Kutta II and IV order methods.

Unit - III**Solutions of Simultaneous Linear Algebraic Equations**

Gauss Elimination method, Gauss Jordan method and LU Decomposition method.

Iterative methods

Jacobi's iterative method and Gauss-Seidel iterative method.

Unit – IV

Interpolation: Newton-Gregory forward interpolation, Newton-Gregory backward interpolation, Divided differences, Newton's divided difference and Lagrange's interpolation.

Statistical methods: Introduction, Definitions, Classifications, Frequency Distribution, Mean – Arithmetic Mean for grouped and ungrouped data and Geometric Mean for grouped and ungrouped data.

References:

1. Numerical Methods – E Balaguruswamy, Tata McGraw-Hill Publishing Company Limited.
2. Engineering Mathematics - Dr. K.S. Chandrashekar, SudhaPublcations.
3. Computer Oriented Numerical Methods -Rajaraman V.
4. Fundamentals of Mathematical Statistics - Gupta and Kapoor
5. Probability and Statistics for engineers and scientists - Ronald E. Walpole and Raymond H Mayers
6. Mathematical Statistics - John Freund.

SC**PROBABILITY AND STATISTICS****3:1:0****Objectives:**

- Extend and formalize knowledge of the theory of probability and random variables.
- Introduce new techniques for carrying out probability calculations and identifying probability distributions.
- Study elementary concepts and techniques in statistical methodology.

Outcomes:

Students will be able to:

- Use axioms and theorems to describe events and compute probabilities.
- Identify the types of random variables involved in a given problem and calculate relevant probabilities.
- Describe an appropriate statistical model for the given data and compute population parameters using appropriate estimators.

Unit I:

Probability: The concept of probability, the axioms and theorems, conditional probability, Independent Event's, Bayes Theorem. Random Variables and Probability Distributions:

Random variables, discrete probability distributions and Distribution functions: Bernoulli, Binomial, Hyper Geometric, Geometric, Poisson, Uniform.

Unit II:

Continuous Probability distribution and Distributions functions: Exponential, Normal, Uniform, Concepts of Chi square, t joint Distributions, Independent random variables, Functions of random Variables.

Unit III:

Mathematical Expectation: Definition, Functions of Random variables. The variance and Standard Deviation, Moments, Moment Generating Functions, Covariance, Correlation Coefficient. Sampling Theory & Estimation: Population and sample, Random Sampling with and without replacement, the sample mean, sampling distribution of means, proportions, differences. The sample variance, the sample distribution of variances, Point estimates, Interval estimates. Variance analysis.

Unit IV:

Tests of Hypotheses and Significance: Statistical Decisions, Statistical hypotheses, Null Hypotheses, Tests of hypotheses and significance, Type I and Type II errors, level of significance, Tests involving the Normal distribution, One-Tailed and Two-tailed, Special tests of Significance for large and small samples, The Chi-square test for goodness of fit. Introduction to regression and curve fitting.

References:

1. Fundamentals of Statistics - S C Gupta and V K Kapoor.
2. Fundamentals of Statistics - S C Gupta.
3. Probability and Statistics with Reliability, Queuing and Computer Applications -Jusgir S Trivedi, Prentics Hall of India.
4. Probability, Random Variables and Stochastic Processes - Papoulis and S. Unnikrishna Pillai, McGraw Hill, 4th Edition.
5. Probability and Statistics for Engineers- Richard A Johnson, Prentice Hall India.

SC**THEORY OF LANGUAGES AND AUTOMATA****2:1:1****Objectives:**

- Introduce concepts in automata theory and theory of computation
- Identify different formal language classes and their relationships
- Design grammars and recognizers for different formal languages
- Prove or disprove theorems in automata theory using its properties

Outcomes:

Students will be able to:

- Acquire a fundamental understanding of the core concepts in automata theory and formal languages
- Design grammars and automata (recognizers) for different language classes.
- Identify formal language classes and prove language membership properties.
- Prove and disprove theorems establishing key properties of formal languages and automata.

Unit I

Brief introduction to Formal Proof: Deductive Proofs, Proving equivalences about sets, the contrapositive, Proof by contradiction, Counterexamples, Central concepts of automata theory: Alphabets, strings, languages.

Finite Automata: Deterministic Finite Automata, Nondeterministic Finite Automata, Equivalence of DFA and NFA, Finite Automata with Epsilon transitions.

Unit II

Regular Expressions, Finite Automata and Regular Expressions: Converting DFAs to regular expressions by eliminating states, converting regular expressions to automata, Applications of regular expressions, Brief overview of algebraic laws of regular expressions.

Properties of Regular Languages: The pumping lemma for regular languages, Applications of the pumping lemma, Closure properties and decision properties of regular languages (proofs not necessary), Minimization of DFAs

Unit III

Context-Free Grammars, Parse Trees, Applications of context-free grammars, Ambiguity in grammars and languages.

Pushdown Automata : Definition, Languages of a PDA, Equivalence of PDAs and CFGs, Deterministic Pushdown Automata.

Normal Forms of Context-free grammars

Unit IV

The pumping lemma for context-free languages, Closure properties of context-free languages (proofs not necessary).

Brief introduction to Turing Machine: Notation for Turing Machine, Instantaneous descriptions for Turing Machines, Transition Diagrams for Turing Machine. Definition of Post's Correspondence Problem.

References

1. Introduction to Automata Theory, Languages and Computation - Hopcroft J. E and Ullman, J.D, Narosa Publishing House, Delhi.
2. Introduction to Languages and Theory of Computation, -John C Martin^{3rd} edition. TMH Publication,

SC**DIGITAL IMAGE PROCESSING****3:0:1****Objectives:**

- Understand the fundamentals of digital image processing.
- Learn the different Image enhancement techniques.
- Understand the image segmentation techniques.

Outcome:

Students will be able to:

- Demonstrate the fundamentals of digital image processing.
- Impart image enhancement in spatial and frequency domains.
- Implement the techniques of image segmentation.

Unit I: Introduction and Digital Image Fundamentals

What is Digital Image Processing?, The Origins of Digital Image Processing, Examples of Fields that use Digital Image Processing, Fundamental steps in Digital Image Processing, Components of Image Processing System, Elements of Visual Perception, Image Sampling and Quantization, Some Basic Relationships Between Pixels, Linear and Nonlinear Operations

Unit II: Image Enhancement in the Spatial Domain

Some Basic Gray Level Transformations, Histogram Processing, Enhancement using Arithmetic/Logic Operations, Basics of Spatial Filtering, Smoothing Spatial Filters, Sharpening Spatial Filters.

Unit III: Image Enhancement in the Frequency Domain

Introduction to the Fourier Transform and the Frequency Domain, Smoothing Frequency Domain Filters, Sharpening Frequency Domain Filters, Homomorphic Filtering.

Unit IV: Image Segmentation

Detection of Discontinuities, Edge Linking and Boundary Detection, Thresholding, Region-based Segmentation, Segmentation by Morphological Watersheds.

Reference:

1. Digital Image Processing – Rafael C. Gonzalez and Richard E. Woods, 2nd Edition, Pearson Education.

SC**CRYPTOGRAPHY AND NETWORK SECURITY****3:1:0****Objectives:**

- Understand the principles Computer Security.
- Learn conventional cryptosystem.
- Know public key cryptosystem
- Have a detailed knowledge about authentication, hash functions and application level security mechanisms.

Outcomes:

Students will be able to:

- Implement the principles and practices of cryptographic techniques.
- Build simple cryptosystems by applying encryption algorithms.
- Comprehend secure identity management (authentication), message authentication, and digital signature techniques.
- Employ the authentication protocol and web security methods.

Unit I: Computer Security Concepts and Classical Encryption Techniques

Introduction-computer security concepts, attacks, security services, security mechanisms; Classical encryption techniques-symmetric cipher models, substitution techniques, transposition techniques, rotor machines

Unit II: Block Ciphers-DES and Introduction to Public Key Cryptography

Symmetric ciphers-Block cipher principles; DES-Algorithm, strengths and weaknesses of DES, attacks on DES and defense, multiple encryptions; Asymmetric ciphers-Essential mathematics, public key cryptography,

Unit III: RSA, MAC and Digital Signatures

RSA, Diffie Hellman key exchange, random number generation, Data integrity and authentication Hash functions; MAC; Digital signatures;

Unit IV: Key Management, Authentication and System Security

Key management; Authentication, Web and system security, Web security; IP security; E mail security; System security-intruders, malicious software, firewalls

References:

1. Cryptography and Network Security -Principles and Practice - William Stallings, PEARSON
2. Cryptography and Network Security -AtulKahate, Tata McGraw Hill

SC**C# PROGRAMMING****3:0:1****Objectives:**

- Understand Object-Oriented Paradigm using C# programming.
- Learn extended OOP's concept in C# environment.
- Understand the concepts of interfaces and multithreading.

Outcome:

Students will be able to:

- Acquire the knowledge on .NET framework and basics of C#.
- Implement the extended the OOP's concept in C# environment.
- Develop an applications using standard C# libraries

Unit – I**Understanding .NET: The C# Environment**

The .Net Strategy, The Origins of .Net Technology, The .NET Framework, The Common Language Runtime, Framework Base Classes, Benefits of the .NET Approach.

Overview of C#

Introduction, A Simple C# Program, Namespaces, Adding Comments, main Returning a Value, Using Aliases for Namespace Classes, passing String Objects to WriteLine Method, Command Line Arguments, Main with a Class, Providing Interactive Input, Using mathematical Functions, Multiple main Methods, Compile Time Errors, Program Structure, Program Coding Style.

Methods in C#

Introduction, Declaring Methods, The Main Method, Invoking Methods, Nesting of Methods, Method Parameters, Pass by Value, Pass by Reference, The Output Parameters, Variable Argument Lists, Method Overloading.

Arrays, Strings, Structures and Enumerations.

Unit – II**Classes and Objects**

Introduction, Basic Principles of OOP, Defining a Class, Adding Variables, Adding Methods, Member Access Modifiers, Creating Objects, Accessing Class members, Constructors, Static Members, Static Constructors, Private Constructors, Copy Constructors, Destructors, Member Initialization, The this Reference, Nesting of Classes, Constant Members, Read-only Members, Properties, Indexers.

Operator Overloading

Introduction, Overloadable Operators, Need for Operator Overloading, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading Comparison Operators.

Unit - III**Inheritance**

Introduction, Classical Inheritance, Containment Inheritance, Defining a Subclass, Visibility Control, Defining Subclass Constructors, Multilevel Inheritance, Hierarchical Inheritance.

Run-Time Polymorphism

Overriding methods, Hiding Methods, Abstract Classes, Abstract Methods, Sealed Classes, and Sealed Methods.

Managing Errors and Exceptions

Introduction, What is Debugging?, Types of Errors, Exceptions, Syntax of Exception handling Code, Multiple Catch Statements, Using Finally Statements, Nested Try Blocks, Throwing Our Own Exceptions, Checked and Unchecked Operators.

Unit - IV

Interfaces

Introduction, Defining an Interface, Extending an Interface, Implementing Interfaces, Interfaces and Inheritance, Abstract Class and Interfaces.

Multithreading in C#

Introduction, Understanding the System.Threading Namespace, Creating and Starting a Thread, Scheduling a Thread, Synchronizing Threads, Thread Pooling.

Delegates and Events

Introduction, Delegates, Delegate Declaration, Delegate Methods, Delegate Instantiation, Delegate Invocation, Multicast Delegates, Events.

References:

1. PROGRAMMING IN C# - A PRIMER by E Balaguruswamy, Third Edition, Tata McGraw-Hill Publications, New Delhi.
2. C# 4.0: The Complete Reference by Herbert Schildt, Tata McGraw-Hill Edition.

SC**OPERATIONS RESEARCH****3:1:0****Objectives:**

- Understand the scientific methods of providing various departments of an organization with a quantitative basis of decision making.
- Know the importance of various tools and techniques in finding optimal solutions to problems.
- Understand the concept and importance of Transportation problems.

Outcomes:

Students will be able to:

- Understand the meaning, definitions, scope, need, phases and techniques of operations research.
- Formulate as L.P.P and derive optimal solutions to linear programming problems by graphical method, Simplex method, Big-M method and Dual Simplex method.
- Implement Transportation and Assignment problems and derive optimum solutions for transportation, Assignment and travelling salesman problems.

Unit I:

Definition of the term Operations Research – Nature , Management Application , Modeling , Principles of modeling , features , Different Phases , scope , Advantages and Limitations of O.R. General method for solving O.R models and Role o O.R in decision making. Some important definitions – solutions to LPP, feasible solution, basic solutions, Basic feasible solution, Optimum basic feasible solution, unbounded solution. Assumptions in LPP, Limitations of LPP, Applications of LPP and advantages of LPP.

Unit-II:

Linear Programming – Formulation of a Linear Programming Solving L.P.P. by Graphical Method Problem and Simplex Method.

Artificial Variable Technique – Two phase method and Big M method,

Duality – Meaning, definitions of primal problem, General rules for converting any primal problem into its dual. Characteristics of Dual problem, Advantages of Duality, Dual formulation procedure and Problems to obtain the dual of LPP.Fundamental Duality theorems, Primal and Dual correspondence.

Unit III:

Transportation Problems – Initial basic notations, North West corner method, least cost method, Vogel’s approximation method- Solution for transportation problem, Assignment problem using Hungarian method.

Unit-IV:

Sequencing Problems – Definitions, terminology and notations, Principle assumptions, Processing ‘n’ jobs through two machines

Travelling Salesman (Routing) Problems - Formulations of TSP as an assignment problem

Reference Books:

1. Quantitative Techniques - N D Vohra.
2. Operations Research -HamdyTaha.
3. Operations Research -S.D.SharmaKedarnathRamnath Publishers 16th edition.
4. Operations Research - J.K Sharma, 5th Edition, MacMillan Publishers.
5. Operations Research - S.K. Kumar, First Edition, Khataria and Sons Publishers

SC**SYSTEM SOFTWARE****3:0:1****Objectives:**

- Understand the design of an assembler for a simple machine architecture.
- Understand the need and design of a macro processing facility.
- Learn about loading, different loading schemes and issues related to it, and implementation of a loader.
- Get an overview of compiler functions and learn about basic lexical analysis and parsing.

Outcomes:

Students will be able to:

- Demonstrate the design of assembler.
- Impart various issues related to processing macros.
- Employ different loaders schemes, and related issues.
- Implement simple lexical analyser and parser with Lex and Yacc.

Unit I

Introduction, general machine structure, general approach to a new machine, assemblers, general design procedure, design of assembler- statement of problem, data structure, format of data bases, algorithm, look for modularity.

Unit II

Macro language and the macro processor – macro instructions, features of a macro facility, macro instruction arguments, conditional macro expansion, macro calls within macros, macro instructions defining macros, implementation of a restricted facility.

Unit III

Loaders, Loader schemes, design of an absolute loader, design of a direct linking loader- specification of problem, specification of data structures, format of data bases, algorithm.

Unit IV

Introduction to Compilers: Language Processors, Structure of a Compiler.

Introduction to Lex and Yacc: The Simplest Lex Program, Recognizing Words With LEX, Symbol Tables, Grammars, Parser-Lexer Communication, A YACC Parser, The Rules Section, Running LEX and YACC, Using LEX, Using YACC – Grammars, What YACC Cannot Parse, A YACC Parser - The Definition Section, The Rules Section, Symbol Values and Actions

References

1. Systems Programming - John J. Donovan, Tata McGraw-Hill Edition.
2. Compilers: Principles, Techniques, and Tools - Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, 2nd Edition, Pearson.
3. Lex & Yacc - John R. Levine, Tony Mason, Doug Brown, 2nd Edition, O'Reilly, 2012
4. System Software: An introduction to system programming - Leland L. Beck and D. Manjula, 3rd edition.
5. Systems Programming and Operating Systems - D. M. Dhamdhere, Second Revised Edition, Tata McGraw-Hill.

SC**SYSTEM ANALYSIS AND DESIGN****3:1:0****Objectives:**

- Understand the basics of system concepts and learn the feasibility study of the system.
- Learn the data analysis of a new system and tools associated in structured analysis.
- Understand the concepts of system testing and standards related to Documentation and management
- Understand the concepts of system security and recovery management

Outcomes:

Students will be able to:

- Gather data for analysis and specify the requirements of a system.
- Design system components and environments.
- Build general and detailed models that assist programmers in implementing a system.
- Design a user interface for data input and output, as well as controls to protect the system and its data.

Unit I:

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open & closed system and man-made information systems.

System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success.

Initial Investigation: Determining user's requirements and analysis, fact finding process and techniques.

Feasibility study: Determination of feasibility study, Technical, Operational & Economic Feasibilities, System performance constraints, identification of system objectives and feasibility report.

Unit II:

Cost/Benefit Analysis: Data analysis, cost and benefit analysis of a new system and categories determination.

Tools of structured Analysis: Logical and Physical models, context, diagram, data dictionary, data diagram, IPO and HIPO charts, Gantt charts and pseudo codes. Flow charts- system flow chart, run flow charts etc., decision tree and decision tables.

Unit III:

Input/ Output and Form Design: Input and output form design methodologies, menu, screen design and layout consideration.

Management standards: Programming and operating standards.

Documentation standards: User and programming manual.

System testing & quality: System testing, quality assurance and software maintenance.

Unit IV:

System security: Data Security, Disaster/ recovery and ethics in system development.

Organization of EDP: Introduction, Job Responsibilities & duties of EDP Personnel- EDP manager, System Analyst, Programmers, Operators etc. Selection of Data Processing Resources: purchase, lease, rent-advantages and disadvantages.

References:

1. System Analysis and Design- Awad, Elias M- 2nd Edition, Galgotia Publication Pvt.Ltd.
2. System Analysis & Design - V K Jain, Dreamtech Press
3. Modern System Analysis & Design - A Hoffer, F George, S Valaciah Low Priced Edition, Pearson Education.
4. Information Technology & Computer Applications -V.K.Kapoor, Sultan Chand & Sons, New Delhi.

SC**INFORMATION RETRIEVAL****3:0:1****Objectives:**

- Become familiar with difference between Information retrieval and data Base Management Systems.
- Learn different indexing techniques used in retrieval system.
- Understand the concepts of cluster analysis.
- Understand the text classification techniques.

Outcomes:

Students will be able to:

- Locate relevant information in large collections of data
- Impart features of retrieval systems for Text data
- Analyze the performance of retrieval systems using test collection.
- Implement different clustering algorithms

Unit I :Boolean retrieval and classical models

An example information retrieval problem, A first take at building an inverted index, Processing Boolean queries; The term vocabulary and postings lists: Document delineation and character sequence decoding, Determining the vocabulary of terms, Faster posting list intersection via skip pointers, Positional postings and phrase queries. Index construction – Blocked sort-based indexing, Single-pass in-memory indexing, Distributed indexing, Dynamic indexing, other types of indexes.

Unit-II: Computing scores in a complete search system

Efficient scoring and ranking, components of an information retrieval system, vector space scoring and query operator interaction, information retrieval system evaluation, Standard test collections, Evaluation of unranked and ranked retrieval results, Assessing relevance, A broader perspective: System quality and user utility, Results snippets

Unit-III: Data Cluster analysis

What is Cluster Analysis, Different Types of clustering's, Different types of clusters, Kmeans – the basic K-means algorithm, additional Issues, K – means and different types of clusters, Strengths and weaknesses, K – means as an optimization Problem, DBSCAN – Center based approach, The DBSCAN Algorithm, Strengths and weaknesses, Fuzzy Clustering, Minimum spanning tree clustering

Unit-IV: Text classification and naive bayes

The text classification problem, Naive bayes text classification, properties of Naive bayes, feature selection, Evaluation of text classification; Support vector machines and machine learning on documents – Support vector machines and machine learning on documents - Support vector machines: The linearly separable case, Issues in the classification of text documents, Machine – learning methods in ad hoc information retrieval; Web search basics – Background and history, Web characteristics, Advertising as the economic model, The search user experience;

References:

1. Introduction to information Retrieval – Christopher D.Manning, Prabhakar Raghavan, HinrichSchutze
2. Introduction to Data Mining – Pang – Ning Tan, Vipin Kumar, Michael Steinbach
3. Information Retrieval: Algorithms and Heuristics - David A. Grossman, Ophir FriederSecond Edition, The Information Retrieval Series, Vol. 15, Springer.
4. Algorithms for Clustering Data - Anil K Jain, R. C. Dubes

SC**BIG DATA ANALYTICS****2:1:1****Objectives:**

- Identify the characteristics of datasets and compare the trivial data and big data for various applications
- Introduce students the concepts and challenges of big data
- Know the implementation of parallel processing with Map Reduce
- Teach students in applying skills and tools to manage and analyze the big data

Outcomes:

Students will be able to:

- Understand the concept and challenge of big data and why existing technology is inadequate to analyze the big data
- Collect, manage, store, query, and analyze various forms of big data
- Map the impact of big data for business decisions and strategy
- Understand the significance of No SQL databases over RDBMS

Unit I: Wholeness of Big Data

Introduction; Understanding Big Data; Caselet: IBM Watson : A Big Data system; Capturing Big Data; Benefitting, Management, Organizing and Analyzing Big data; Technology Challenges for Big Data; Big Data Sources and Applications

Unit II: Big Data Architecture and Distributed Computing Using Hadoop

Google query Architecture; Standard Big Data Architecture; Big data Architecture Examples – IBM Watson, Ebay, Netflix, Paypal; Introduction to Hadoop Framework, HDFS Design Goals, Master Slave Architecture; Installing HDFS – Reading and Writing Local files into HDFS, Reading and Writing Data Streams into HDFS

Unit III: Parallel Processing with Map Reduce:

Introduction, How Google search Works, Map Reduce overview; Sample Map Reduce Application: Wordcount, Map Reduce Programming, Map Reduce Jobs Execution, Hive and Pig Language capabilities

Unit IV: No SQL databases

Introduction, RDBMS Vs NOSQL, Types of NoSQL Databases, Architecture of No SQL, CAP theorem; HBase – Architecture Overview, Reading and Writing Data; Cassandra – Architecture Overview, Protocols, Data Model, Cassandra Writes and Reads, Replication

References:

1. Big Data Made Accessible -Anil Maheshwari
2. Big Data Analytics - M. VijayalakshmiRadhaShankarmani
3. Data Science and Analytics - VK Jain

SC**INFORMATION SYSTEMS MANAGEMENT****3:1:0****Objectives:**

- Understand the role information system in business.
- Learn different functional business management systems.
- Understand e-commerce applications and decision support systems.
- Analyzing security and ethical challenges in IT.
- Understand security management of IT.

Outcomes:

Students will be able to:

- Acquire the knowledge on role of ISM in business.
- Identify the applications of e-commerce and issues of e-commerce.
- Identify the security and ethical issues in IT.
- Develop security mechanisms in IT by using security management tools.

UNIT I: Information System Concepts

Information Systems in Business: Introduction, The real world of Information Systems, The fundamental role of IS in business, Trends in IS, Types of Information systems, Managerial challenges of IT.

System Concepts: A foundation, Components of an Information System, Information System Resources, Information System activities, Recognizing Information Systems.

UNIT II: Enterprise Business Systems and Functional Business System

Enterprise Business Systems: Introduction, Cross-functional enterprise applications, Enterprise application integration, Transaction processing systems, Enterprise collaboration systems.

Functional Business Systems: Introduction, Marketing systems, Manufacturing systems, Human resource systems, Accounting systems, financial management systems.

Customer relationship management: Introduction, What is CRM? The three phases of CRM, Benefits and challenges of CRM, Trends in CRM, Enterprise resource planning: Introduction, What is ERP? Benefits and challenges of ERP, Trends in ERP. Supply chain Management: Introduction, What is SCM? The role of SCM, Benefits and challenges of SCM, Trends in SCM

Unit III: Electronic Commerce and Decision Support Systems

Electronic commerce fundamentals: Introduction, The scope of e-commerce, Essential e-commerce, processes, Electronic payment processes.

e-Commerce applications and issues: E-commerce application trends, Business-to- Consumer e-commerce, Web store requirements, Business-to-Business e-commerce, e-commerce marketplaces, Clicks and bricks in ecommerce.

Decision Support Systems- Decision support in business: Introduction, Decision support trends, Decision support systems (DSS), Management Information Systems, On-line analytical processing, Using DSS, Executive information systems, Enterprise portals and decision support,

Knowledge management systems, Business and Artificial Intelligence (AI), An overview of AI, Expert systems.

Unit IV: Security and Ethical Challenges , Security Management in IT

Security and Ethical Challenges: Security, Ethical and societal challenges of IT: Introduction, Ethical responsibility of business professionals, Computer crime, Privacy issues, other challenges, Health issues, societal solutions. Security management of IT: Introduction, Tools of security management, Internetworked security defenses, other security measures, System Controls and audits.

References:

1. Management information systems: Managing information technology in the internet worked enterprise - Jams. AO'brienTMH publishing company limited.
2. Management information systems – Laudon and Laudon Publishers.
3. Management information systems - S Sadogopan, PHI
4. Information systems for modern management - G.R. Murdick,2nd edition PHI.

SC**E-COMMERCE****3:1:0****Objectives:**

- Impart knowledge on E-Commerce, Various applications connected with E-Commerce.
- Enable the learner for aiming careers in special software development involving E-Commerce technologies.
- Understand the security issues in E - commerce

Outcomes:

Students will be able to:

- Analyze the impact of E-commerce on business models and strategy
- Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intraorganizational structures.
- Assess electronic payment systems and its securities.
- Recognize and discuss global E-commerce issues

Unit I: Introduction to E-Commerce

Definition, Scope of E-Commerce, Hardware requirements, E-Commerce and Trade Cycle, Electronic Markets, Electronic Data Interchange and Internet Commerce.

Unit II: Business to Business E-Commerce

Electronic Markets, Electronic Data Interchange (EDI): Technology, Standards (UN/EDIFACT), Communications, Implementations, Agreements, Security, EDI and Business, Inter-Organizational Ecommerce. Business models for E-commerce, Business Process Re-Engineering.

Unit III: Business to Consumer E-Commerce and E-Business

Consumer trade transaction, Web metrics, Elements of E-Commerce, Industry impacts of E-business. Integrating Intranet and internet web applications across multiple networks. Internet bookshops, Software supplies and support, Electronic Newspapers, Internet Banking, Virtual Auctions, Online Share Dealing, Gambling on the net, E-Diversity, Case studies through internet.

Unit IV: Security Issues

How criminals plan attacks, passive attack, Active attacks, cyber stalking, Secure Electronic Transaction (SET) Protocol, Electronic cash over internet, Internet Security, Search engines, Intelligent agents in E-Commerce Electronic payment systems

References:

1. E-Commerce: Strategy, Technologies & Applications - David Whitley, Mcgraw Hill.
2. E-commerce: The Cutting Edge of Business - K. K. Bajaj and Debjani Nag, 2nd Edition, Mcgraw Hill.

3. Handbook of Electronic Commerce - Shaw et al.,Springer,.
4. Global Electronic Commerce: Theory and Case Studies - C. Westland and T. H. K. Clark, UniversityPress.
5. Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives –SunitBelapure and Nina Godbole, Wiley India.

SC**SIMULATION AND MODELING****3:0:1****Objectives:**

- Know the basic principles of Simulation.
- Learn basic components of a system with classification and examples.
- Understand different methods for random number generation.
- Know different types of simulations with respect to output analysis.

Outcomes:

Students will be able to:

- Implement different algorithms associated with generation of Random numbers.
- Analyze the real time problems with respect to verification and validation of Simulation Models.
- Understand the output analysis for different types of Simulations.

Unit I: Introduction to Simulation

Definition of Simulation, Simulation as a Appropriate and In appropriate tool, Applications of Simulation; Systems and System Environment, Components of a system Model of a system, types and examples; discrete and continuous systems;

Unit II: Random Number Generation

Properties of Random Numbers, Generation of Pseudo-Random Numbers, Techniques for Generating Random Numbers, Tests for Random Numbers(Algorithms and Problems)- Frequency tests, Runs Tests, Gap tests.

Unit III: Random Variate Generation

Inverse Transform Technique; Direct Transformation for the normal Distribution; Convolution Method, Acceptance-Rejection Technique

Unit-IV: Verification and Validation of Simulation Models

Model Building, Verification and Validation, Verification of Simulation Models, Calibration and Validation of models – Validating Input – Output Transformations; Output Analysis for a Single Model – Types of Simulations with Respect to Output Analysis, Output Analysis for Terminating Simulations, Output Analysis for steady state Simulations – Replication Method

References:

1. Discrete System Simulation - Jerry Banks, John S Carson II, Barry L Nelson, David M Nicol, Pearson Education Asia
2. System Simulation - Geoffrey Gordon, Prentice Hall India
3. System Simulation with Digital Computers - N. Deo, PHI

SC**ARTIFICIAL INTELLIGENCE****3:1:0****Objectives:**

- Know an overview of artificial intelligence (AI) principles and approaches.
- Have a basic understanding of the building blocks of AI in terms of intelligent agents like Search, Knowledge representation, inference, logic, and learning.
- Understand expert systems, learning and planning which plays a considerable role in certain applications.

Outcomes:

Students will be able to:

- Understand different types of AI agents.
- Know the task domains of Artificial Intelligence.
- Gain insight into various knowledge representation issues.
- Comprehend expert system, learning, planning and make use of these concepts further in real time environment.

Unit I: Introduction

AI Problems, AI Techniques, Defining the Problem as State Space Search, Production Systems, Problem Characteristics, Production System Characteristics, Issues in the Design of Search Programs.

Unit II :Heuristic Search Techniques and Knowledge Representation

Generate and Test, Hill climbing, BFS, DFS, problem reduction, constraints satisfaction, means-ends analysis, Knowledge Representation Issues, Approaches to Knowledge Representation, Issues in Knowledge Representation, Representing simple facts in logic using predicate logic, Procedural Versus Declarative Knowledge, Inferential Versus Inheritable Knowledge, Normal Forms in Predicate Logic and Clausal Forms, Introduction to Non-monotonic Reasoning, Logics for Non-monotonic Reasoning.

Unit III: Knowledge Representational Structures

Weak Slot and Filler Structures: Semantic Nets, Frames.

Strong Slot and Filler Structure: Conceptual Dependency, Scripts.

Unit IV: Game Playing, Planning and Expert Systems

Game Playing: Minimax Search Procedure, Adding Alpha-Beta Cut Offs, iterative deepening, Planning –components of a planning systems, Goal Stack Planning, Non linear planning using constraint hosting, Hierarchical planning, Learning, rote learning, learning by taking advice, learning by problem solving, learning from examples Expert Systems: Representing and using domain knowledge, Expert system shells, explanation, Knowledge Acquisition.

References:

1. Artificial Intelligence- Rich Elaine Knight Kevin , Tata McGraw Hill .
2. Introduction to Artificial Intelligence and Expert system - Patterson W Dan,Prentice Hall.

SC**PATTERN RECOGNITION****2:1:1****Objective:**

- Understand the basics of pattern recognition systems
- Learn the different techniques of estimations and component analysis.
- Learn the different supervised learning techniques.
- Learn the different unsupervised learning techniques.

Outcome:

Students will be able to:

- Acquire the knowledge on basics of pattern recognition systems
- Demonstrate the techniques of estimations and component analysis.
- Implement different supervised learning techniques.
- Implement different unsupervised learning techniques.

Unit I: Introduction

Machine perception, Pattern recognition systems, Design cycle, Learning and adaptation.

Introduction, Bayesian decision theory - Continuous features, Classifiers Discriminate functions and Decision surfaces, Normal density and Discriminant functions for the Normal Density, Bayes decision theory- Discrete features

Unit II: Maximum Likelihood and Bayesian Parametric Estimation

Introduction, Maximum likelihood estimation, Bayesian estimation, Bayesian parametric estimation, sufficient statistics, Problems of dimensionality, Component Analysis and Discriminants

Unit III: Nonparametric Techniques

Introduction, Density estimation, Parzen windows, K-Nearest Neighbor estimation, The nearest neighbor rule, Metrics and Nearest Neighbor Classification, Fuzzy Classification, Basics of Neural networks, Support vector machines

Unit IV Unsupervised Learning

Mixture Densities and Identifiability, Maximum – Likelihood Estimates, Application to Normal Mixtures, Unsupervised Bayesian Learning, Data Description and Clustering, Criterion Functions for Clustering, Hierarchical clustering, Online clustering, Graph Theoretic Methods,

References

1. Pattern Classification, 2nd Edition - R.O Duda, P.E. Hart and D.G. Stork, Wiley publications
2. Pattern Recognition and Image Analysis - Earl Gose, Richard, Johnsonbaugh, Steve Jost, Prentice Hall of India, Pvt Ltd.

SC**ENTREPRENEURSHIP DEVELOPMENT****3:1:0****Objective:**

- Understand the basic concepts in the area of entrepreneurship.
- Have the knowledge on the role and importance of entrepreneurship for economic development.
- Develop a personal creativity and entrepreneurial initiative, adopting of the key steps in the elaboration of business idea.
- Develop the stages of the entrepreneurial process and the resources needed for the successful development of entrepreneurial ventures.

Outcome:

Students will be able to:

- The students will gain sufficient knowledge and confidence to explore the various Entrepreneurial opportunities.
- Analyze the business environment in order to identify business opportunities.
- Evaluate the effectiveness of different entrepreneurial strategies.
- Specify the basic performance indicators of entrepreneurial activity.

Unit 1: Entrepreneurship: Definition, requirements to be an entrepreneur, Characteristics of entrepreneur, intrapreneur, entrepreneur vs. manager, growth of entrepreneurship in India, Women entrepreneurship, Social Entrepreneurship.

Unit II: Entrepreneurial Motivation: motivating factors, motivation theories- McClelland's Need Achievement Theory, Government's policy actions towards entrepreneurial motivation in the form of Subsidies and Training, Entrepreneurship development programmes.

Unit III: Business Plan: Identification and Selection of projects; Project report: contents and formulation, concept of project evaluation. Feasibility study report. Detailed Project Report.

Types of Enterprises: Small scale, Medium scale and Large scale enterprises as per MSME Act 2006. Role of small enterprises in economic development, proprietorship, partnership, Limited Liability Partnership and Public Limited companies, Formation, Capital structure and Source of finance. Venture Capital, Angel Capital.

Unit IV: Institutional Support and Policies: Institutional Support towards the development of entrepreneurship in India, technical consultancy organizations, government policies for small scale enterprises. Role of EDII, DIC, NIESBUD, NASSCOM and IFCI. Make in India, Skill India and Newstart-ups. Case Studies: Successful and Failed Entrepreneurs.

References:

- Dynamics of Entrepreneurship Development – Vasant Desai.
- Entrepreneurship: New Venture Creation – David H. Holt
- Entrepreneurship Development New Venture Creation – Satish Taneja, S.L.Gupta
- Project management – K. Nagarajan.
- Entrepreneurship: Strategies and Resources – Marc J. Dollinger

SC**CYBER SECURITY AND FORENSIC DEVELOPMENT****3:1:0****Objectives:**

- Provide an understanding of Information security fundamentals.
- Learn various computer forensics technologies.
- Understand the concepts of ethical hacking.
- Acquire knowledge about IPR in cyberspace.

Outcomes:

Students will be able to:

- Acquire the knowledge on definition of information security fundamentals.
- Describe the types of computer forensics technology.
- Analyze various ethical hacking systems.
- Summarize concepts of IPR in cyberspace

UNIT-I:Introduction to Information Systems

Types of information Systems, Introduction to information security, Need for Information security, Threats to Information Systems, Information Security Investigations. Security threats - Sources of security threats- Motives - Target Assets and vulnerabilities – Consequences of threats- E-mail threats - Web-threats - Intruders and Hackers, Insider threats, Security Threats to E-Commerce, Cyber-crimes.

UNIT-II:Cyber Forensics

Cyber Security, Cyber Security roles, Cyber Security Principles, Difference between information Security and Cyber Security, Types of Computer Forensics Technology, Types of Military Computer Forensic Technology, Types of Law Enforcement: Computer Forensic Technology, Types of Business Computer Forensic Technology, Specialized Forensics Techniques, Hidden Data and How to Find It, Spyware and Adware, Encryption Methods and Vulnerabilities, Protecting Data from Being Compromised Internet Tracing Methods, Security and Wireless Technologies, Avoiding Pitfalls with Firewalls Biometric Security Systems.

UNIT-III: Ethical Hacking

Essential Terminology, Hacking windows – Network hacking – Web hacking – Password hacking, Malware, Scanning, Cracking. Digital Evidence in Criminal Investigations: The Analog and Digital World, Training and Education in digital evidence, Evidence Collection and Data Seizure: Why Collect Evidence, Collection Options Obstacles, Types of Evidence, The Rules of Evidence, Volatile Evidence, General Procedure, Collection and Archiving, Methods of Collection, Artifacts, Collection Steps, Controlling Contamination: The Chain of Custody, Reconstructing the Attack, The digital crime scene, Investigating Cybercrime, Duties Support Functions and Competencies.

UNIT-IV: Cyber Crimes and Cyber Security Standards

Crime incident Handling Basics: Cyber activism, Tracking hackers, clues to cyber-crime, privacy act, search warrants, common terms, organizational roles, procedure for responding to incidents, reporting procedures, legal considerations, Information Technology Act 2000: Scope, jurisdiction, offense and contraventions, powers of police, adjudication, Intellectual property issues in cyberspace, ISO, Copyright Act, Patent Law, Cyber Laws in India.

References:

1. Cryptography and Information Security - V.K. Pachghare, PHI Learning Private Limited, India.
2. Computer Security: Principles and Practice - William Stallings and Lawrie Brown, Prentice Hall.
3. Threat Modeling- Swiderski, Frank and Syndex, Microsoft Press.
4. Cyber Security Operations Handbook -John W. Rittinghouse, William M. Hancock, ElsevierPub.
5. Computer Ethics -Deborah G Johnson, 4th Edition, Pearson Education Publication.
6. "Ethical Decision making and IT: An Introduction with Cases - Earnest A. Kallman, J.P Grillo, McGraw Hill Publication.
7. Introduction to Information Security and Cyber Law - Dr. Surya Prakash Tripathi, RitendraGoyal, Praveen Kumar Shukla, WilleyDreamtech Press.
8. Cyber Security and Global Information Assurance: Threat Analysis and Response Solutions, Kenneth J. Knapp, IGI Global.
9. Cyber Laws and Its Protection, Cahnder, Harish, PHI Learning Private Limited,Delhi,India.
10. Principles of Information Security - Michael E. Whitman, Herbert J. Mattord, Cengage Learning Pub.
11. Analyzing Computer Security, Charles P. Pfleeger, Shari LawerancePfleeger, Pearson Education India.
12. Computer Network Security - Joseph M Kizza, Springer Verlag.

SC**VALUES & ETHICS****3:1:0****Objectives:**

- Creating awareness about the importance of professional ethics.
- Understand the effect of technology on the social issues.
- Build an awareness how to develop technologies that do not disturb the psychological wellbeing of the society.

Outcomes:

Students will be able to:

- Know the importance of ethics and methods of developing technologies
- Describe the structure and function of an ethical society.
- Identify the values and ethics of professional development.
- Explain the causes, effects and control measures for various types of societal failures.
- Get knowledge about various ethical management methods

Unit I: Effects of Technological Growth

- Science, Technology and Engineering as Knowledge and as Social and Professional Activities.
- Rapid Technological growth and depletion of resources. Related latest Reports, Limits of growth; sustainable development.
- Energy Crisis; Renewable Energy Resources.
- Environmental degradation and pollution. Eco-friendly Technologies. Environmental Regulations. Environmental Ethics.
- Appropriate Technology Movement of Schumacher: later developments.
- Technology and developing nations. Problems of Technology transfer. Technology assessment, impact analysis.
- Human Operator in Engineering projects and industries. Problems of man machine interaction. Impact of assembly line and automation. Human centered Technology.

Unit II: Profession and Human Values:

- Nature of values: Value Spectrum of a 'good' life.
- Value Crisis in contemporary society.
- Psychological values: Integrated personality; mental health Societal values: The modern search for a 'good' society, justice, democracy, secularism, rule of law; values in Indian Constitution.
- Aesthetic values: Perception and enjoyment of beauty, simplicity, clarity.
- Moral and ethical values: Nature of moral judgments; canons of ethics; Ethics of virtue; ethics of duty; ethics of responsibility.

Unit III: Ethics of Profession

- Engineering profession: Ethical issues in engineering practice. Conflicts between business demands and professional ideals. Social and ethical Responsibilities of Technologists. Codes of professional ethics. Whistle blowing and beyond. Case studies

Unit IV: IPR

- Introduction to IPR, IPR Laws in India

References:

1. Blending the best of the East & West - Dr.Subir Chowdhury, EXCEL.
2. Ethics & Management. & Indian Ethos - Ghosh ,VIKAS.
3. Business Ethics- Pherwani,EPH.
4. Ethics, Indian Ethos & Management. - Balachandran,Raja,Nair,Shroff Publishers.
5. Values & Ethics of Profession & Business - S.K.Sarangi, Asian Books Private Limited.

SC**MOBILE COMMUNICATION****3:1:0****Objectives:**

- Make students familiar with fundamentals of mobile communication systems.
- Choose system (TDMA/FDMA/CDMA) according to the complexity, installation cost, speed of transmission, channel properties etc.
- Identify the requirements of mobile communication as compared to static communication.
- Identify the limitations of 2G and 2.5G wireless mobile communication and use design of 3G and beyond mobile communication systems.

Outcomes:

Students will be able to:

- Understand the concept of cellular communication.
- Understand the basics of wireless communication.
- Have knowledge of GSM and CDMA mobile communication standard, its architecture, logical channels, advantages and limitations.
- Understand multicarrier communication systems.

Unit I:

Introduction - Introduction to Mobile Communication, History of wireless communication, A simplified reference model.

Wireless transmission - Signals, Antennas, Signal propagation: Path loss of radio signals, Additional signal propagation effects and Multi-path propagation. Multiplexing: Space, Frequency, Time and Code division multiplexing. Modulation: Amplitude, Frequency and Phase shift keying.

Spread spectrum: Direct sequence spread spectrum & Frequency hopping spread spectrum and cellular system.

Unit II:

Medium access control - Motivation for specialized MAC: Hidden and exposed terminals & Near and far terminals. SDMA, FDMA, TDMA: Fixed TDM, Classical Aloha and Slotted Aloha, CDMA and Comparison SDMA/FDMA/TDMA/CDMA.

Unit III:

Telecommunication systems - GSM: System architecture, Protocols and Handover.

DECT: System architecture and Protocol architecture, TETRA, UMTS: UMTS releases and standardization & UMTS system architecture and IMT-2000.

Satellite systems - History, Applications, Basics: GEO, LEO and MEO, Routing, Localization and Handover.

Unit IV:

Broadcast systems: Overview, Cyclical repetition of data, Digital audio broadcasting, digital video broadcasting: DVB data broadcasting and DVB for high-speed internet access & convergence of broadcasting and mobile communication.

Wireless LAN: Infra red vs radio transmission, IEEE 802.11: System architecture. Bluetooth: User scenarios & Architecture.

References:

1. Mobile Communications -Jochen Schiller, 2nd Edition, Pearson Education.
2. Introduction To Digital Mobile Communication - Yoshihiko Akaiwa, Wiley India Pvt Ltd
3. Mobile Cellular Communication - Rao, Pearson Education.