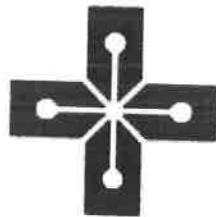


St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

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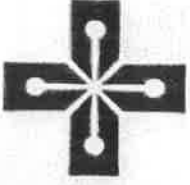


UNITE • IMPROVE • INFLUENCE

Academic Council

18th meeting on 06.09.2018

AGENDA



IGNITE • INSPIRE • INNOVATE

St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Deemed to be University U/S 3 of the UGC Act, 1956)

Avadi, Chennai – 600 054. Tamil Nadu.

Phone: 044-26558080-84/26558090 Fax. 044-26555430

E-mail: spiher@stpetersuniversity.org

Website: www.stpetersuniversity.org

Dr. L. Mahesh Kumar
Registrar

SPIHER /REG/F009/AC-18/2018

29.08.2018

To

All the Members of the Academic Council,
St. Peter's Institute of Higher Education and Research.

Sir/Madam,

Sub: Academic Council – 18th meeting on 06.09.2018 –
Meeting notice - Reg.

The 18th meeting of the Academic Council is scheduled to be held on 06.09.2018 at 11.00 a.m. at the Conference Hall in the Institute. All the members are requested to attend the meeting.

The Agenda is enclosed.

Yours faithfully,

L. Mahesh Kumar
Registrar

Copy to:

1. All the Deans/HoDs
2. The Secretary, UGC
3. The Finance Officer
4. Estate Officer
5. Office File/Guard File

For information:

1. The Chancellor
2. The Vice Chancellor

ST. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

Avadi, Chennai - 600 054. Tamil Nadu.

ACADEMIC COUNCIL

Reconstitution of Academic Council as per UGC (Institutions Deemed to be Universities) Regulations 2016 with effect from 01.08.2017

| S.No. | Category | Members |
|-------|---|---|
| 1. | Vice Chancellor (Ex officio) | Chairman |
| 2. | Pro Vice Chancellor (Ex officio) | — |
| 3. | Dean(s) of Faculties (Ex officio) | All the Deans |
| 4. | Heads of the Departments (Ex officio) | All the HoDs |
| 5. | All Professors other than the Heads of the Departments (Ex officio) | All Professors other than HoDs |
| 6. | Two Associate professors from the Departments other than the Heads of the Departments by rotation of seniority (Two years) | 1. Ms. Ashwini Hebsur, Architecture 2. Dr. K. Balaji, Electrical and Electronics Engineering (from 01.08.2018) |
| 7. | Two Assistant professors from the Departments by rotation of seniority (Two years) | 1. Mr. P. Balaji, Electronics & Instrumentation Engineering 2. Dr. P. Subhashini, Computer Science and Engineering |
| 8. | Three persons from amongst educationists of repute or persons from any other field related to the activities of the University, nominated by the Vice-Chancellor (Two years) | 1. Dr. P. Natarajan, Academic Director, Kovai Kalaimagal Group of Institutions, Thondamuthur, Coimbatore . 2. Dr. K.A. Chinnaraju, Director, Coimbatore Institute of Engineering and Technology, Coimbatore. 3. Dr. G. Ranganath, Principal Adhiyamaan College of Engineering, Dr. M.G.R. Nagar, Hosur. |
| 9. | Three persons who are not members of the teaching staff, co-opted by the Academic Council for their specialized knowledge. (Two years) | 1. Dr. R. Parvathi, M.B.B.S.(Physician) 2. Mr. S. Ramamurthy (Economist) 3. Mr. S. Balakrishnan, (Industrialist) |
| 10. | The Registrar, who shall be the Secretary of the Academic Council. (Ex officio) | Secretary |

Note: The representation of different categories shall be only through rotation and not through election. It may also be ensured that no particular faculty dominates the membership of the Council.

Term of Membership: The term of members other than the ex-officio members shall be two years from 01.08.2017.

Date: 01.08.2018


Registrar

St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Deemed to be University U/S 3 of the UGC Act. 1956)
Avadi, Chennai - 600 054.

Minutes of the 17th Meeting of the Academic Council

Date: 23.03.2018 at 11.00 a.m.

Members Present

1. Dr. Francis C Peter, Vice Chancellor
2. Dr. D.S. Ramachandra Murthy, Dean
3. Prof. K . Rajamanickam, Dean
4. Dr. Kasthuri Kantharaj, Dean
5. Dr. K. Balagurunathan, Dean
6. Dr. L. Mahesh Kumar, Dean
7. Dr. S. Gunasekaran, Dean
8. Dr. P. Asha, HoD-Civil Engg
9. Dr. S. Pushpa, HoD-CSE
10. Mr. K. Balamurugan, HoD-IT
11. Mr. Laspha Paul Raj, HoD/ B.Arch
12. Dr. R. Latha, HoD-MCA
13. Dr. R. Gayatri, HoD-MBA
14. Dr. N. Srinivasan, HoD-Mathematics
15. Dr. S. Stella Mary, HoD-Physics
16. Dr. Sayeeda Sultana, HoD-Chemistry
17. Dr. P. Periyasamy, HoD- Mechanical Engg
18. Dr. S. Uma Maheshwari, HoD- English
19. Mrs. A. Bharathi, HoD- Aero
20. Prof. R. Jayaraman, HoD-EEE
21. Dr. G.P. Ramesh, HoD- ECE
22. Mr. K. Balaji, Asst. Prof. - EIE

The Vice Chancellor welcomed the members of the Academic Council and presented report on academic matter as follows:

I report to the Academic Council that the Hon'ble Supreme Court in its order dated 03.11.2017 directed as follows:

- (a) *"1994 AICTE Regulations, do apply to Deemed to be Universities and the Deemed to be Universities in the present matter were not justified in introducing any new courses in Technical Education without the approval of AICTE".*
- (b) *"The UGC is further directed to take appropriate steps implement Section 23 of the UGC Act and restrain Deemed to be Universities from using the word 'University' within one month from today".*

UGC sent two letters to implement the orders of the Supreme Court. Our Institute dropped the word 'University' and the name and the style of the institute is as registered at the time of the conferment of the deemed to be University status in May 2008. That is 'St. Peter's Institute of Higher Education and Research'.

Further our institute applied to the AICTE for approval of the following programmes in Engineering and Technical Education.

UG Programmes:

1. B.E. Mechanical Engineering
2. B.E. Civil Engineering
3. B.E. Electronics and Communication Engineering
4. B.E. Electrical and Electronics Engineering
5. B.E. Computer Science and Engineering
6. B.E. Bio Medical Engineering
7. B. Tech. Information Technology

PG Programmes:

1. M.E. Advanced Manufacturing Technology
2. M.E. Structural Engineering
3. M.E. Communication Systems
4. M.E. Power Electronics and Drives
5. M.E. Computer Science and Engineering
6. M.E. Bio Medical Engineering
7. M. Tech. Information Technology

The AICTE made an inspection of our institute on 03.03.2018 and subsequently our representatives presented required documents at the Head Quarters of the AICTE.

In this connection, the concerned Boards of Studies in Engineering and Technology and Arts and Humanities met and finalized the curriculum for I & II semesters of B.E./B.Tech. on the basis of AICTE model curriculum for implementation from the Academic Year 2018-19 under the Regulations 2018.

These Regulations 2018 and Syllabi are now placed before the Academic Council for consideration.

17.1 Considered the minutes of the 16th meeting of the Academic Council held on 06.09.2017.

RESOLVED the minutes of the 16th meeting of the Academic Council held on 06.09.2017 be confirmed. **(Appendix-I)**

17.2 Considered the report on the action taken on the minutes of the 16th meeting of the academic council.

NOTED the action taken on the minutes of the 16th meeting of the academic council. **(Appendix-II)**

17.3 (a) Considered the minutes of the 17th meeting of the following Boards of Studies held on the dates mentioned:

1. Biomedical Engineering (13.03.2018)
2. Civil Engineering (15.03.2018)
3. Computer Science and Engineering (13.03.2018)
4. Electronics and Communication Engineering (13.03.2018)
5. Electrical and Electronics Engineering (13.03.2018)
6. Information Technology (13.03.2018)
7. Mechanical Engineering (12.03.2018)
8. Computer Science and Applications (14.03.2018)
9. Science and Humanities (16.03.2018)

RESOLVED that the minutes of the 17th meeting of the following Boards of Studies held on the dates mentioned be approved. **(Appendix-III)**

1. Biomedical Engineering (13.03.2018)
2. Civil Engineering (15.03.2018)
3. Computer Science and Engineering (13.03.2018)
4. Electronics and Communication Engineering (13.03.2018)
5. Electrical and Electronics Engineering (13.03.2018)
6. Information Technology (13.03.2018)
7. Mechanical Engineering (12.03.2018)
8. Computer Science and Applications (14.03.2018)
9. Science and Humanities (16.03.2018)

(b) Considered the new Regulations 2018 with syllabi for the I and II semesters of B.E. / B.Tech in Civil Engineering / Mechanical Engineering / Biomedical Engineering / Computer Science and Engineering / Information Technology / Electronics and Communication Engineering / Electrical and Electronics Engineering on the pattern of AICTE Model Curriculum as per the minutes of the concerned Boards of Studies. [17.3 (a)]


RESOLVED that the new Regulations 2018 with syllabi for the I and II semesters of B.E. / B.Tech in Civil Engineering / Mechanical Engineering / Biomedical Engineering / Computer Science and Engineering / Information Technology / Electronics and Communication Engineering / Electrical and Electronics Engineering on the pattern of AICTE Model Curriculum as per the minutes of the concerned Boards of Studies be approved. **(Appendix-IV)**

(c) Considered the minutes of the 17th meeting of the Board of Studies in Research held on 15.03.2018.

RESOLVED that the minutes of the 17th meeting of the Board of Studies in Research held on 15.03.2018 be approved. **(Appendix-V)**

17.4 Considered the minutes of the 11th meeting of the Board of Studies in Architecture held on 14.03.2018.

RESOLVED that the minutes of the 11th meeting of the Board of Studies in Architecture held on 14.03.2018 be approved. **(Appendix-VI)**


Vice-Chancellor

Date: 23.03.2018


Registrar

ST. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

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Avadi, Chennai - 600 054.

18th Meeting of the Academic Council

Date: 06.09.2018

**Action Taken on the Minutes of the 17th meeting of Academic Council
held on 23.03.2018**

Item Action taken

17.1 Noted

17.2 Noted

17.3 (a) Informed the HoDs concerned for further action, wherever
 required.

(b) Informed all the HoDs for further action.

(c) Informed all the HoDs for further action.

17.4 Informed the HoD / Architecture to take necessary action.

Date: 09.08.2018


Registrar

| S.NO | DEPARTMENT NAME |
|------|---|
| 1. | Architecture |
| 2. | Biomedical Engineering |
| 3. | Civil Engineering |
| 4. | Computer Science and Engineering |
| 5. | Electronics and Communication Engineering |
| 6. | Electrical and Electronics Engineering |
| 7. | Mechanical Engineering |
| 8. | Information Technology |
| 9. | Biochemistry |
| 10. | Biotechnology |
| 11. | Business Administration |
| 12. | Chemistry |
| 13. | Computer Science and Application |
| 14. | Commerce |
| 15. | English |
| 16. | Economics |
| 17. | Mathematics |
| 18. | Microbiology |
| 19. | Physics |
| 20. | Tamil |
| 21. | Visual Communication |

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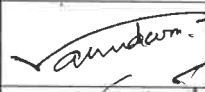


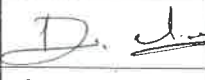



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AVADI, CHENNAI - 600 054.

MINUTES OF THE 12th MEETING OF THE BOARD OF STUDIES IN

B.ARCH

Held on 23.8.2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|-------------------|------------------------|-----------------|---|
| 1. | Ar Vasudevan T J | Professor and Director | Chairman |  |
| 2. | Ar P.Kanimozhi | Professor | Member |  |
| 3. | Ar Ashwini Hebsur | Associate Professor | Member |  |
| 4. | Ar D.Mugundhan | Assistant Professor | Member |  |
| 5. | Ar Mushtaq Ahmed | Practicing Architect | External Member |  |
| 6. | Ar Sethu | Practicing Architect | External Member |  |
| 7. | Dr Kumudhavalli | Academician | External Member |  |



Chairman




Registrar

St. Peter's Institute of Higher Education and Research
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Avadi, Chennai - 600 054

2.1 **CONSIDERED** the minutes of the 11th meeting of Board of Studies in Architecture held on 14.03.2018.

RESOLVED that the minutes of the 11th meeting of Board of Studies in Architecture held on 14.03.2018 be confirmed and to include the following new elective courses in III

semester from the batch of students to be admitted from 2019-20 under the Regulation 2015 to be approved. (Appendix - I)

1. 915ART11 SUSTAINABLE URBAN HABITAT

12.2 REVIEWED the Regulations and Syllabi of B. Arch. Programme under the Regulations 2015 and considered the classification of the proposed diverse courses and inter-disciplinary courses under Choice Based Credit System (CBCS) with following are the amendments proposed

- In the syllabus of 217ARP02 – Architectural Design – I, the students shall be allowed to do visualization exercises for concept and massing development in simple modeling software like Google SketchUp.
- In the syllabus of 717ART06 – Glass Architecture & Design, Case study to any Glass manufacturing unit and one week industrial training to be included as part of the course.
- In the syllabus of 817ART09 – Sustainable Architecture and Planning, in Unit- V the concept of smart city to be added. Case study of Auroville city and Aranya Low-cost housing in India and International case studies of Zurich city, Sydney city, Freiburg green city etc., to be added. Case study visit to Mahindra World city or any smart city module proposed in India to be added.
- In the syllabus of 817ARP01 – Architectural Design – VII, the study of high rise settlement to be included. Projects related to the Urban Design study carried out in the previous semester to be incorporated as a component in the Design problems given
- In the syllabus of 917ARP01 – Practical Training, Study and Documentation of architectural characteristics / social / historical / spatial importance any five historical/ architectural / socially significant buildings / structures / urban forms / open spaces to be studied under the guidance of the Architect under whom the student will be undertaking the internship.
- In the syllabus of 1017ART01 – Architectural journalism and Photography, review articles of journal publications, book reviews of Biography / autobiography of renowned architect and their works to be added.
- It is recommended that in the regulations and syllabus of B.Arch. programme under the Regulations 2017, 917ARP01 – Practical Training scheduled in the IX semester as per the formulated scheme of examinations, to be conducted in the VIII semester to enable easy placement of students in Architect's offices.

RESOLVED that Regulations and Syllabi of B. Arch. Programme under the Regulations 2015 and considered the classification of the proposed diverse courses and inter-disciplinary courses under Choice Based Credit System (CBCS) with the amendments proposed be confirmed.

Date: 23.08.2018



Chairman



Registrar

St. Peter's Institute of Higher Education and Research
Deemed to be University U/S 3 of the UGC Act, 1956
Avadi, Chennai-600 054

APPENDIX - I

OBJECTIVES:

Introduce urban housing problems, their causes and discover solutions thereof.

Anticipated Learning Outcomes: Ability to comprehend housing as a key component of urban habitat, closely linked to urban infrastructure and urban economy, to connect emerging concepts in environment studies With Human needs towards more sustainable paradigms form As housing.

UNIT I SHELTER FORMS

Shelter, housing form, Census of India definitions, Housing policies, demand and supply, housing shortage, income and affordability, poverty and slums, green housing, green rating

UNIT II SOCIAL ECONOMIC DIMENSIONS

Social security, role of housing in family and community well-being, status and prestige, safety, crime and insecurity, deprivation and social vulnerability, ghetto-ism, gender issues, housing and the elderly.

UNIT III NEIGHBORHOOD

Neighborhood as a major constituent of the City Plan, Traditional and modern approaches to neighborhood planning, planning and design standards for area distribution, density, development controls and building byelaws, UDPFI guidelines, NBC provisions,

UNIT IV SUSTAINABLE INFRASTRUCTURE FOR NEIGHBORHOOD

Transit-oriented development, Mass Solar Energy generation, Smart Energy and water conservation, Recycling ofWaste.Net-Zero communities

REFERENCES:

- Introduction to Housing, HERA (Author) Prentice Hall (2005) Davis, Sam. The Architecture of Affordable Housing. Marcus, C. C., Housing As if People Mattered: 2012.
- Site Design Guidelines for Medium-density Housing Clapham D., Clark, W.A.V., 2012.
- The SageHandbook ofHousing Studies. Sage, London. Levitt, David & Levitt, Bernstein, 2010.
- The Housing Design Handbook. Routledge, New York.Ferre, A. and Salij, T.H., .2010. Total housing: Alternatives to Urban Sprawl. Actar, New York.




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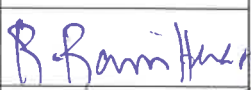


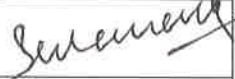


(Declared under Section 3 of the UGC Act. 1956)
AVADI, CHENNAI - 600 054.

MINUTES OF THE 18th MEETING OF THE BOARD OF STUDIES IN

ELECTRICAL AND ELECTRONICS ENGINEERING (EEE)

Held on 25.08.2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|------------------------------|---|-----------------|---|
| 1. | Dr. R. Rani Hemamalini | Professor & Head | Chairman |  |
| 2. | Dr. J. Jasper Gnana Chandran | Professor | Internal Member |  |
| 3. | Dr. K. Balaji | Associate Professor | Internal Member |  |
| 4. | Mr. S. Saravanan | Assistant Professor | Internal Member |  |
| 5. | Dr. S. Chandramohan | Professor & Head, Department of EEE, Anna University-Chennai. | External Member |  |
| 6. | Dr. Sithu D Sudarsan | Group Manager/ ABB Corporate Research, Bangalore. | External Member |  |




Chairman


Registrar

St. Peter's Institute of Higher Education and Research
(Deemed to be University U/S 3 of the UGC Act, 1956)
Avadi, Chennai-600 054.

18.1 Considered the minutes of the 17th meeting of Board of Studies in Electrical and Electronics Engineering held on 13.03.2018.

RESOLVED that the minutes of the 17th meeting of Board of Studies in Electrical and Electronics Engineering held on 13.03.2018 be confirmed

18.2 Reviewed the Regulation & Syllabi of B.E. Electrical and Electronics Engineering programme under the Regulations 2018.

RESOLVED that the Regulation & Syllabi of B.E. Electrical and Electronics Engineering programme under the Regulations 2018 to be continued

18.3 Reviewed the Regulation & Syllabi of M.E (Power Electronics and Drive) programme under the Regulations 2018.

RESOLVED that the Regulation & Syllabi of M.E (Power Electronics and Drive) programme under the Regulations 2018.

18.4 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.E (EEE) under the Regulations 2018 & Regulation 2013 and M.E. (Power Electronics and Drive) under the Regulations 2018.

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.E (EEE) under the Regulations 2018 & Regulation 2013 and M.E. (Power Electronics and Drive) under the Regulations 2018 to be approved.

18.5 Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.E (Electrical and Electronics Engineering) and M.E. (Power Electronics and Drive).

RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on "VACEE039 – SMART INDUSTRIAL SAFETY" be approved for the upcoming semester (2019-20).

18.6 Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – III)

Date: 25.08.2018




Registrar

St. Peter's Institute of Higher Education and Research
(Deemed to be University U/S 3 of the UGC Act, 1956)
Avadi, Chennai-600 054.


Chairman

St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Deemed to be University U/S 3 of the UGC Act, 1956)
AVADI, CHENNAI - 600 054.

MINUTES OF THE 18th MEETING OF THE BOARD OF STUDIES IN CIVIL ENGINEERING

Held on 20.08.2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|-----------------------------------|--|-----------------------------------|---|
| 1. | Dr.V.B.M.SAYANA | Professor & Head Department of Civil Engineering, SPIHER | Chairman |  |
| 2. | Dr.P.ASHA | Professor Department of Civil Engineering, SPIHER | Internal Member |  |
| 3. | Dr.K.KARTHIK | Associate Professor, Department of Civil Engineering, SPIHER | Internal Member |  |
| 4. | MR.P.BABU KAMARAJ | Assistant Professor, Department of Civil Engineering, SPIHER | Internal Member |  |
| 5. | Mr.P.SAMPATH | Assistant Professor, Department of Civil Engineering, SPIHER | Internal Member |  |
| 6. | Dr.V.LEVIN KALYANA SUNDARAM | Assistant Professor, CWR, Anna University | External Member (Academics) |  |
| 7. | Mr.S.SRIRAM | CEO, VIVARDHANA | External Member (Industry) |  |




Registrar

St. Peter's Institute of Higher Education and Research
(Deemed to be University U/S 3 of the UGC Act, 1956)
Avadi, Chennai-600 054.


Chairman

Dr. V.B.M. SAYANA, M.E., Ph.D.,
Professor & Head
Department of Civil Engg.
St. Peter's Institute of Higher Education and Research
(Deemed to be University U/S 3 of the UGC Act, 1956)
Avadi, Chennai-600 054.

18.1 Considered the minutes of the 17th meeting of Board of Studies in CIVIL ENGINEERING held on 15.03.2018.

RESOLVED that the minutes of the 17th meeting of Board of Studies in CIVIL ENGINEERING held on 15.03.2018 be confirmed

18.2 Reviewed the Regulation and Syllabi of B.E (CIVIL ENGINEERING) programmes under the Regulations 2018 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.E (CIVIL ENGINEERING) programmes under the Regulations 2018 with Choice Based Credit System (CBCS) to be continued.

18.3 Reviewed the Regulation and Syllabi of M.E. (STRUCTURAL ENGINEERINGs) under the Regulations 2018 with Choice Based Credit System (CBCS).


RESOLVED that the Regulation and Syllabi of M.E. (STRUCTURAL ENGINEERINGs) under the Regulations 2018 with Choice Based Credit System (CBCS) be continued

18.4 Reviewed the Regulation and Syllabi of B.E (CIVIL ENGINEERING) programmes under the Regulations 2013 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.E (CIVIL ENGINEERING) programmes under the Regulations 2013 with Choice Based Credit System (CBCS) to be continued.

18.5 Reviewed the Regulation and Syllabi of M.E. (STRUCTURAL ENGINEERINGs)




Registrar
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Avadi, Chennai-600 054.

under the Regulations 2013 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of M.E. (STRUCTURAL ENGINEERINGs) under the Regulations 2013 with Choice Based Credit System (CBCS) be continued.

18.6 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.E (CIVIL) programme under the Regulations 2018 & 2013 and M.E. (STRUCTURAL ENGINEERINGs) under the Regulations 2018 & 2013 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

18.7 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.E (CIVIL) under the Regulations 2018 & 2013 and M.E. (STRUCTURAL ENGINEERINGs) under the Regulations 2018 & 2013

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.E (ECE) under the Regulations 2018 & 2013 and M.E. (STRUCTURAL ENGINEERINGs) under the Regulations 2018 & 2013 to be approved.

18.8 Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.E (CIVIL ENGINEERING) and M.E. (STRUCTURAL ENGINEERINGs).




Registrar
St. Peter's Institute of Higher Education and Research
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RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on “Advanced Antenna Design & Simulation” be approved for the upcoming semester (2018-19 – Even semester).

18.9 Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved.

Date: 20.08.2018


Chairman

Dr. V.B.M. SAYANA, M.E., Ph.D.,
Professor & Head
Department of Civil Engg.
St. Peter's Institute of Higher Education and Research
(Deemed to be University U/S 3 of the UGC Act, 1956)
Avadi, Chennai-600 054.


Registrar

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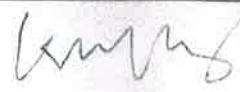





St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH


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AVADI, CHENNAI - 600 054.

MINUTES OF THE 18th MEETING OF THE BOARD OF STUDIES IN BIOMEDICAL ENGINEERING

Held on 01.08.2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|----------------------|---|-----------------|---|
| 1. | Dr. K. Kantharaj | Professor & Head | Chairman |  |
| 2. | Ms. A. Vanitha | Assistant Professor | Internal Member |  |
| 3. | Ms. K. Sruthi | Assistant Professor | Internal Member |  |
| 4. | Ms. Gnancy Subha | Assistant Professor | Internal Member |  |
| 5. | Dr. Radha Saraswathy | Senior Professor School of Bio Sciences and Technology Vellore Institute of Technology | External Member |  |
| 6. | Mr. R. J. Vasu | Senior Technical Expert Siemens Health care Private Limited, Chennai | External Member |  |


Registrar
St. Peter's Institute of Higher Education and Research
(Deemed to be University U/S 3 of the UGC Act, 1956)
Avadi, Chennai-600 054.


Chairman

18.1 Considered the minutes of the 17th meeting of Board of Studies in Biomedical Engineering held on 13.03.2018.

RESOLVED that the minutes of the 17th meeting of Board of Studies in Biomedical Engineering held on 13.03.2018 be confirmed

18.2 Reviewed the Regulation & Syllabi of B.E. Biomedical Engineering programme under the Regulations 2013.

RESOLVED that the Regulation & Syllabi of B.E. Biomedical Engineering programme under the Regulations 2013 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the following subjects.

1. 513BMP01- Microprocessor and microcontroller laboratory
2. 513BMP02-Biomedical instrumentation laboratory

18.3 Reviewed the Regulation & Syllabi of B.E (Biomedical Engineering) programmes under the Regulations 2017 and 2018 with Choice Based Credit System (CBCS).

RESOLVED that the Syllabi of B.E. (Biomedical Engineering) under the Regulations 2017 and 2018 with Choice Based Credit System (CBCS) to be continued with addition of following subjects

1. 517BMT01- Bio control systems
2. 517BMT02-Diagnostic and therapeutic equipment-I
3. 517BMT03-Biomaterials and artificial organs
4. 517BMT04-Biomedical Instrumentation
5. 517BMT05- Microprocessor and microcontroller
6. 517BMT06-Hospital management
7. 617BMT01-Radiological Equipment
8. 617BMT02-Biomechanics
9. 617BMT03-Diagnostic and therapeutic equipment-II
10. 617BMT04-Principles of digital signal processing
11. 617BMT05-Analog and digital communication
12. 617BMT07-Biometric systems
13. 617BMP01-Digital signal processing laboratory
14. 617BMP02-Diagnostic and therapeutic equipment laboratory
15. 617BMP03- Communication and soft skills lab
16. 218PPP02-Programming for problem solving using C and Python laboratory
17. 318BMT01-Probability theory and stochastic processes


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18. 318BMT02- Biochemistry
19. 318BMT03-Biosignals and systems
20. 318BMT04-Elctron devices and circuits
21. 318BMP01-Electron devices and circuits laboratory
22. 318BMT05-Anatomy and human physiology
23. 318BMP02-Anatomy and human physiology laboratory
24. 318BMT06-Environmental Science
25. 318BMP03-PCB designing laboratory
26. 418BMT01-Biocontrol systems
27. 418BMT02-Biomaterials and artificial organs
28. 418BMT03-Biosensors and measurements
29. 418ECT06-Analog and digital ICs
30. 418ECP04-Analog and digital ICs laboratory
31. 418BMT05-Pathology and microbiology
32. 418BMP02-Pathology and microbiology laboratory
33. 418ECT09-Analog and digital communication
34. 418BMI01-Internship I

18.4 Reviewed the Syllabi and course structure of M.E.(Biomedical Engineering) programmes under the Regulations 2013 & 2018 with Choice Based Credit System (CBCS).

RESOLVED that the Syllabi and course structure of M.E. (Communication Systems) programmes under the Regulations 2013 with Choice Based Credit System (CBCS) be continued and regulation 2018 be continued with the addition of following subjects

1. 318BMPT05-Biomedical optics
2. 318BMPT01- Rehabilitation Engineering
3. 318BMPT07- Hospital Waste Management
4. 318BMPP01-Hospital/Biomedical Industry training
5. 318BMPP0-Project Phase-I
6. 418BMPP01-Project Phase II

18.5 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.E (Biomedical Engineering) programme under the Regulations 2013, 2017 & 2018 and M.E. (Biomedical Engineering) under the Regulations 2013 & 2018 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

18.6 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.E (BME) under


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the Regulations 2013, 2017 & 2018 and M.E. (Biomedical Engineering) under the Regulations 2013 & 2018.

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.E (BME) under the Regulations 2013 & 2017 and M.E. (BME) under the Regulations 2013 & 2018 to be approved.

- 18.7** Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.E (Biomedical Engineering) and M.E. (Biomedical Engineering).

RESOLVED that the value added courses imparting transferable and life skills offered to be approved for the upcoming semester (2019-20 Even semester).

- 18.8** Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – III)

Date: 01.08.2018



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V SEMESTER

517BMT01 - BIO CONTROL SYSTEMS

OBJECTIVES:

- To study the concept and different mathematical techniques applied in analyzing any given system
- To learn the analysis of given system in time domain and frequency domain
- To study the stability analysis of the given system
- To study the concept of physiological control system

UNIT I MODELING OF SYSTEMS

Terminology and basic structure of control system, example of a closed loop system, transfer functions, modeling of electrical systems, translational and rotational mechanical systems, and electro mechanical systems, block diagram and signal flow graph representation of systems, conversion of block diagram to signal flow graph, reduction of block diagram and signal flow graph

UNIT II TIME RESPONSE ANALYSIS

Step and impulse responses of first order and second order systems, determination of time domain specifications of first and second order systems from its output responses, definition of steady state error constants and its computations.

UNIT III STABILITY ANALYSIS

Definition of stability, Routh- Hurwitz criteria of stability, root locus technique, construction of root locus and study of stability, definition of dominant poles and relative stability.

UNIT IV FREQUENCY RESPONSE ANALYSIS

Frequency response, Nyquist stability criterion, Nyquist plot and determination of closed loop stability, definition of gain margin and phase margin, Bode plot, determination of gain margin and phase margin using Bode plot, use of Nichol's chart to compute response frequency and bandwidth.

UNIT V PHYSIOLOGICAL CONTROL SYSTEM

Example of physiological control system, difference between engineering and physiological control systems, generalized system properties, models with combination of system elements, linear models of physiological systems-Examples, introduction to simulation.

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Demonstrate the need for mathematical modeling of various systems, representation of systems in block diagrams and signal flow graphs and are introduced to biological control systems.
- CO2. Analyze the time response of various systems and discuss the concept of system stability
- CO3. Analyze the frequency response characteristics of various systems using different charts
- CO4. Describe the concept of modeling basic physiological systems
- CO5. Comprehend the application aspects of time and frequency response analysis in physiological control systems.

TEXT BOOKS:

1. M. Gopal "Control Systems Principles and Design", Tata McGraw Hill, 2002 (Units I, II, III & IV).
2. Michael C K Khoo, "Physiological Control Systems", IEEE Press, Prentice Hall of India, 2001 (Unit V).

REFERENCES:

1. Benjamin C. Kuo, "Automatic Control Systems", Prentice Hall of India, 1995.
2. John Enderle Susan Blanchard, Joseph Bronzino "Introduction to Biomedical Engineering", second edition, Academic Press, 2005.
3. Richard C. Dorf, Robert H. Bishop, "Modern control systems", Pearson, 2004.


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517BMT02 - DIAGNOSTIC AND THERAPEUTIC EQUIPMENT- I

OBJECTIVES:

The student should be made to:

- Understand the medical devices applied in measurement of parameters related to cardiology, neurology and the methods of continuous monitoring and transmitting them
- Learn some of the cardiac assist devices
- Learn to measure the signals generated by muscles
- Understand the need and use of some of the extracorporeal devices

UNIT I CARDIAC EQUIPMENT

Electrocardiograph, Normal and Abnormal Waves, Heart rate monitor, Holter Monitor, Phonocardiography, Plethysmography. Cardiac Pacemaker- Internal and External Pacemaker- Batteries, AC and DC Defibrillator- Internal and External³

UNIT II NEUROLOGICAL EQUIPMENT

Clinical significance of EEG, Multi channel EEG recording system, Epilepsy, Evoked Potential-Visual, Auditory and Somatosensory, MEG (Magneto Encephalo Graph). EEG Bio Feedback Instrumentation.

UNIT III SKELETAL MUSCULAR EQUIPMENT

Generation of EMG, recording and analysis of EMG waveforms, fatigue characteristics, Muscle stimulators, nerve stimulators, Nerve conduction velocity measurement, EMG Bio Feedback Instrumentation.

UNIT IV PATIENT MONITORING AND BIOTELEMETRY

Patient monitoring systems, ICU/CCU Equipments, Infusion pumps, bed side monitors, Central consoling controls. Radio Telemetry (single, multi), Portable and Landline Telemetry unit, Applications in ECG and EEG Transmission,

UNIT V EXTRA CORPOREAL DEVICES AND SPECIAL DIAGNOSTIC TECHNIQUES

Need for heart lung machine, functioning of bubble, disc type and membrane type oxygenators, finger pump, roller pump, electronic monitoring of functional parameter. Hemo Dialyser unit, Lithotripsy, Principles of Cryogenic technique and application, Endoscopy, Laproscopy. Thermography – Recording and clinical application, ophthalmic instruments.

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Use different medical devices applied in measurement of parameters related to cardiology,
- CO2. Demonstrate the equipment used in neurology
- CO3. Explain about cardiac assist devices, its continuous monitoring and transmission
- CO4. Measure signals generated by muscles
- CO5. Explain the function of extra corporeal devices and special diagnostic techniques.

TEXT BOOK:

1. Khandpur R.S, "Handbook of Biomedical Instrumentation", Tata McGraw Hill, New Delhi, 2003.

REFERENCES:

1. Myer Kutz, "Standard Handbook of Biomedical Engineering & Design", Mc Graw Hill, 2003.
2. L.A Geddes and L.E.Baker, "Principles of Applied Biomedical Instrumentation", 3rd Edition, 2008
3. Leslie Cromwell, "Biomedical Instrumentation and Measurement", Pearson Education, New Delhi, 2007.
4. Antony Y.K.Chan, "Biomedical Device Technology, Principles and design", Charles Thomas Publisher Ltd, Illinois, USA, 2008.
5. Joseph J. Carr and John M. Brown, "Introduction to Biomedical Equipment Technology", Pearson education, 2004.
6. John G.Webster, "Medical Instrumentation Application and Design", third edition, John Wiley and Sons, New York, 2006.

517BMT03 - BIO MATERIALS AND ARTIFICIAL ORGANS

OBJECTIVES

The student should be made to:

- Learn characteristics and classification of Biomaterials
- Understand different metals and ceramics used as biomaterials
- Learn polymeric materials and combinations that could be used as a tissue replacement implants
- Know artificial organ developed using these materials

UNIT I STRUCTURE OF BIO-MATERIALS AND BIO-COMPATIBILITY

Definition and classification of bio-materials, mechanical properties, visco elasticity, wound healing process, body response to implants, blood compatibility.

UNIT II IMPLANT MATERIALS

Metallic implant materials, stainless steels, Co-based alloys, Ti-based alloys, ceramic implant materials, aluminum oxides, hydroxyapatite, glass ceramics, carbons, medical applications.

UNIT III POLYMERIC IMPLANT MATERIALS

Polymerization, polyamides, Acrylic polymers, rubbers, high strength Thermoplastics, medical applications. Bio polymers: Collagen and Elastin. Medical Textiles: Silica, Chitosan, PLA composites, Sutures, wound dressings. Materials for ophthalmology: contact lens, Intraocular lens. Membranes for plasma separation and Blood oxygenation.

UNIT IV TISSUE REPLACEMENT IMPLANTS

Small intestinal submucosa and other decellularized matrix biomaterials for tissue repair. Soft tissue replacements, sutures, surgical tapes, adhesive, Percutaneous and skin implants, maxillofacial augmentation, Vascular grafts, hard tissue replacement Implants, joint replacements, Pancreas replacement.

UNIT V ARTIFICIAL ORGANS

Artificial blood, Artificial skin, Artificial Heart, Prosthetic Cardiac Valves, Artificial lung (oxygenator), Artificial Kidney (Dialyser membrane), Dental Implants.

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Analyze different types of Biomaterials and its classification and apply the concept of nanotechnology towards biomaterials use.
- CO2. Identify significant gap required to overcome challenges and further development in metallic and ceramic materials, polymer materials.
- CO3. Gain adequate knowledge about artificial organs & transplants
- CO4. Have in-depth knowledge about Artificial organs
- CO5. Develop a knowledge on blood interfacing implants and testing of Biomaterials

REFERENCES:

1. Park J.B., "Biomaterials Science and Engineering", Plenum Press, 1984.
2. Myer Kutz, "Standard Handbook of Biomedical Engineering & Design" Mc Graw Hill, 2003
3. John Enderle, Joseph D. Bronzino, Susan M. Blanchard, "Introduction to Biomedical Engineering", Elsevier, 2005.
4. A.C Anand, J F Kennedy, M. Mirafteb, S. Rajendran, "Woodhead Medical Textiles and Biomaterials for Healthcare", Publishing Limited 2006.
5. D F Williams, "Materials Science and Technology: Volume 14, Medical and Dental Materials: A comprehensive Treatment Volume", VCH Publishers 1992.
6. BD Ratner, AS Hoffmann, FJ Schoen, JE Lemmons, "An introduction to Materials in Medicine" Academic Press 1996

517BMT04 - BIOMEDICAL INSTRUMENTATION

OBJECTIVES:

The students will be exposed to electrical and non-electrical physiological measurements and bioamplifiers.

UNIT I BIO POTENTIAL ELECTRODES

Origin of bio potential and its propagation. Electrode-electrolyte interface, electrode-skin interface, half cell potential, impedance, polarization effects of electrode – nonpolarizable electrodes. Types of electrodes - surface, needle and micro electrodes and their equivalent circuits. Recording problems - measurement with two electrodes.

UNIT II ELECTRODE CONFIGURATIONS

Biosignals characteristics – frequency and amplitude ranges. ECG – Einthoven's triangle, standard 12 lead system. EEG – 10-20 electrode system, unipolar, bipolar and average mode. EMG– unipolar and bipolar mode.

UNIT III BIO AMPLIFIER

Need for bio-amplifier - single ended bio-amplifier, differential bio-amplifier – right leg driven ECG amplifier. Band pass filtering, isolation amplifiers – transformer and optical isolation - isolated DC amplifier and AC carrier amplifier. Chopper amplifier. Power line interference

UNIT IV MEASUREMENT OF NON-ELECTRICAL PARAMETERS

Temperature, respiration rate and pulse rate measurements. Blood Pressure: indirect methods - auscultatory method, oscillometric method, direct methods: electronic manometer, Pressure amplifiers - systolic, diastolic, mean detector circuit. Blood flow and cardiac output measurement: Indicator dilution, thermal dilution and dye dilution method, Electromagnetic and ultrasound blood flow measurement.

UNIT V BIO-CHEMICAL MEASUREMENT

Biochemical sensors - pH, pO₂ and pCO₂, Ion selective Field effect Transistor (ISFET), Immunologically sensitive FET (IMFET), Blood glucose sensors - Blood gas analyzers, colorimeter, flame photometer, spectrophotometer, blood cell counter, auto analyzer (simplified schematic description).

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Differentiate different bio potentials and its propagations.
- CO2. Illustrate different electrode placement for various physiological recordings
- CO3. Design bio amplifier for various physiological recordings
- CO4. Explain various technique for non-electrical physiological measurements
- CO5. Demonstrate different biochemical measurement techniques

REFERENCES:

1. Leslie Cromwell, "Biomedical Instrumentation and measurement", Prentice hall of India, New Delhi, 2007.
2. Myer Kutz, "Standard Handbook of Biomedical Engineering and Design", McGraw Hill Publisher, 2003.
3. Joseph J. Carr and John M. Brown, "Introduction to Biomedical Equipment Technology", Pearson Education, 2004.

517BMT05 - MICROPROCESSOR AND MICROCONTROLLER

OBJECTIVES:

The student should be made to:

- Study the Architecture of 8086 microprocessor.
- Learn the design aspects of I/O and Memory Interfacing circuits.
- Study about communication and bus interfacing.
- Study the Architecture of 8051 microcontroller.

UNIT I THE 8086 MICROPROCESSOR

Introduction to 8086 – Microprocessor architecture – Addressing modes - Instruction set and assembler directives – Assembly language programming – Modular Programming - Linking and Relocation - Stacks - Procedures – Macros – Interrupts and interrupt service routines – Byte and String Manipulation.

UNIT II 8086 SYSTEM BUS STRUCTURE

8086 signals – Basic configurations – System bus timing – System design using 8086 – IO programming – Introduction to Multiprogramming – System Bus Structure - Multiprocessor configurations – Coprocessor, Closely coupled and loosely Coupled configurations – Introduction to advanced processors.

UNIT III I/O INTERFACING

Memory Interfacing and I/O interfacing - Parallel communication interface – Serial communication interface – D/A and A/D Interface - Timer – Keyboard /display controller – Interrupt controller – DMA controller – Programming and applications Case studies: Traffic Light control, LED display , LCD display, Keyboard display interface and Alarm Controller.

UNIT IV MICROCONTROLLER

Architecture of 8051 – Special Function Registers(SFRs) - I/O Pins Ports and Circuits - Instruction set - Addressing modes - Assembly language programming.

UNIT V INTERFACING MICROCONTROLLER

Programming 8051 Timers - Serial Port Programming - Interrupts Programming – LCD & Keyboard Interfacing - ADC, DAC & Sensor Interfacing - External Memory Interface- Stepper Motor and Waveform generation.

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Design and implement programs on 8086 microprocessor.
- CO2. Design I/O circuits.
- CO3. Design Memory Interfacing circuits.
- CO4. Design and implement 8051 microcontroller based systems.
- CO5. Develop a program for interfacing microcontroller

TEXT BOOKS:

1. Yu-Cheng Liu, Glenn A.Gibson, "Microcomputer Systems: The 8086 / 8088 Family - Architecture, Programming and Design", Second Edition, Prentice Hall of India, 2007.
2. Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, "The 8051 Microcontroller and Embedded Systems: Using Assembly and C", Second Edition, Pearson education,2011

REFERENCE:

1. Douglas V.Hall, "Microprocessors and Interfacing, Programming and Hardware: ,TMH,2012

517BMT06 - HOSPITAL MANAGEMENT

OBJECTIVES:

The student should be made to:

Understand the principles, practices and areas of application in Hospital management.

UNIT I OVERVIEW OF HOSPITAL ADMINISTRATION

Distinction between Hospital and Industry, Challenges in Hospital Administration – Hospital Planning – Equipment Planning – Functional Planning - Current Issues in Hospital Management - Telemedicine - Bio-Medical Waste Management

UNIT II HUMAN RESOURCE MANAGEMENT IN HOSPITAL

Principles of HRM – Functions of HRM – Profile of HRD Manager – Tools of HRD – Human Resource Inventory – Manpower Planning. Different Departments of Hospital, Recruitment, Selection, Training Guidelines – Methods of Training – Evaluation of Training – Leadership grooming and Training, Promotion – Transfer.

UNIT III MARKETING RESEARCH & CONSUMER BEHAVIOUR

Marketing information systems - assessing information needs, developing & disseminating information - Market Research process - Other market research considerations – Consumer Markets & Consumer Buyer Behaviour - Model of consumer behaviour - Types of buying decision behaviour - The buyer decision process - Model of business buyer behaviour – Major types of buying situations – global marketing in the medical sector - WTO and its implications

UNIT IV HOSPITAL INFORMATION SYSTEMS & SUPPORTIVE SERVICES

Management Decisions and Related Information Requirement - Clinical Information Systems - Administrative Information Systems - Support Service Technical Information Systems – Medical Transcription, Medical Records Department – Central Sterilization and Supply Department – Pharmacy – Food Services - Laundry Services.

UNIT V QUALITY AND SAFETY ASPECTS IN HOSPITAL

Quality system – Elements, implementation of quality system, Documentation, Quality auditing, International Standards ISO 9000 – 9004 – Features of ISO 9001 – ISO 14000 – Environment Management Systems. NABA, JCI, NABL. Security – Loss Prevention – Fire Safety – Alarm System – Safety Rules. Health Insurance & Managing Health Care – Medical Audit – Hazard and Safety in a hospital Setup.

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Explain the principles, practices and areas of application in Hospital Management.
- CO2. Illustrate the function of human resource management in hospital
- CO3. Demonstrate marketing research and consumer behavior
- CO4. Describe the hospital information systems and supportive services.
- CO5. Analyze the quality and safety aspects in hospital.

TEXT BOOKS:

1. R.C.Goyal, "Hospital Administration and Human Resource Management", PHI – Fourth Edition, 2006 its I, II & III).
2. G.D.Kunders, "Hospitals – Facilities Planning and Management – TMH, New Delhi – Fifth Reprint 2007 (Units III, IV & V).

REFERENCES:

1. Cesar A.Caceres and Albert Zara, "The Practice of Clinical Engineering, Academic Press, New York, 1977.
2. Norman Metzger, "Handbook of Health Care Human Resources Management", 2nd edition Aspen Publication Inc. Rockville, Maryland, USA, 1990.
3. Peter Berman "Health Sector Reform in Developing Countries" - Harvard University Press, 1995.
4. William A. Reinke "Health Planning For Effective Management" - Oxford University Press.1988
5. Blane, David, Brunner, "Health and SOCIAL Organization: Towards a Health Policy for the 21st Century" Eric Calrendon Press 2002.

VI SEMESTER

617BMT01 - RADIOLOGICAL EQUIPMENT

OBJECTIVES:

The student should be made to:

- Understand generation of x-rays and its uses in imaging.
- Learn different types of radio diagnostic techniques.
- Know techniques used for visualizing different sections of the body.
- Learn radiation therapy methodologies and the radiation safety.

UNIT I MEDICAL X-RAY EQUIPMENT

Nature of X-rays- X-Ray absorption – Tissue contrast. X- Ray Equipment (Block Diagram) – X-Ray Tube, the collimator, Bucky Grid, power supply, Digital Radiography- discrete digital detectors, storage phosphor and film scanning, X-ray Image Intensifier tubes – Fluoroscopy – Digital Fluoroscopy. Angiography, cine Angiography. Digital subtraction Angiography. Mammography.

UNIT II COMPUTED TOMOGRAPHY

Principles of tomography, CT Generations, X- Ray sources- collimation- X- Ray detectors- Viewing systems- spiral CT scanning – Ultra fast CT scanners. Image reconstruction techniques- back projection and iterative method.

UNIT III MAGNETIC RESONANCE IMAGING

Fundamentals of magnetic resonance- Interaction of Nuclei with static magnetic field and Radio frequency wave- rotation and precession – Induction of magnetic resonance signals – bulk magnetization – Relaxation processes T1 and T2. Block Diagram approach of MRI system- system magnet (Permanent, Electromagnet and Super conductors), generations of gradient magnetic fields, Radio Frequency coils (sending and receiving), shim coils, Electronic components, fMRI.

UNIT IV NUCLEAR MEDICINE SYSTEM

Radio Isotopes- alpha, beta, and gamma radiations. Radio Pharmaceuticals. Radiation detectors – gas filled, ionization chambers, proportional counter, GM counter and scintillation Detectors, Gamma camera- Principle of operation, collimator, photo multiplier tube, X-Y positioning circuit, pulse height analyzer. Principles of SPECT and PET.

UNIT V RADIATION THERAPY AND RADIATION SAFETY

Radiation therapy – linear accelerator, Telegamma Machine. SRS –SRT,-Recent Techniques in radiation therapy - 3DCRT – IMRT – IGRT and Cyber knife- radiation measuring instruments- Dosimeter, film badges, Thermo Luminescent dosimeters- electronic dosimeter- Radiation protection in medicine- radiation protection principles.

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Describe the working principle of X ray machine and its application.
- CO2. Illustrate the principle computed tomography.
- CO3. Interpret the technique used for visualizing various sections of the body using magnetic resonance imaging
- CO4. Demonstrate the applications of radio nuclide imaging.
- CO5. Outline the methods of radiation safety.

TEXT BOOKS:

1. Steve Webb, The Physics of Medical Imaging, Adam Hilger, Philadelphia, 1988 (Units I, II, III & IV).
2. R.Hendee and Russell Ritenour "Medical Imaging Physics", Fourth Edition William, Wiley-Liss, 2002.

REFERENCES:

1. Gopal B. Saha "Physics and Radiobiology of Nuclear Medicine"- Third edition Springer, 2006.
2. B.H.Brown, PV Lawford, R H Small wood , D R Hose, D C Barber, "Medical physics and biomedical Engineering", - CRC Press, 1999.
3. Myer Kutz, "Standard handbook of Biomedical Engineering and design", McGraw Hill, 2003.
4. P.Ragunathan, "Magnetic Resonance Imaging and Spectroscopy in Medicine

617BMT02 - BIOMECHANICS

OBJECTIVES:

The student should be made to:

- Be exposed to principles of mechanics.
- Learn the mechanics of physiological systems.
- Be familiar with the mathematical models used in the analysis of biomechanical systems

UNIT I INTRODUCTION TO MECHANICS

Principles of Mechanics, Vector mechanics, Mechanics of motion - Newton's laws of motion, Kinetics, Kinematics of motion, Fluid mechanics – Euler equations and Navier Stoke's equations, Viscoelasticity, Constitutive equations, Stress transformations, Strain energy function.

UNIT II BIOFLUID MECHANICS

Introduction, viscosity and capillary viscometer, Rheological properties of blood, laminar flow, Couette flow and Hagen-poiseuille equation, turbulent flow. Cardiovascular system - biological and mechanical valves development, artificial heart valves testing of valves, Structure, functions, material properties and modeling of Blood vessels.

UNIT III BIOSOLID MECHANICS

Hard Tissues: Bone structure & composition mechanical properties of bone, cortical and cancellous bones, viscoelastic properties, Maxwell & Voight models – anisotropy.

Soft Tissues: Structure, functions, material properties and modeling of Soft Tissues: Cartilage, Tendon, Ligament, Muscle.

UNIT IV BIOMECHANICS OF JOINTS AND IMPLANTS

Skeletal joints, forces and stresses in human joints, Analysis of rigid bodies in equilibrium, free body diagrams, types of joint, biomechanical analysis of elbow, shoulder, spinal column, hip knee and ankle. Design of orthopedic implant, specifications for a prosthetic joint, biocompatibility, requirement of a biomaterial, characteristics of different types of biomaterials, manufacturing process of implants, fixation of implants.

UNIT V MODELLING AND ERGONOMICS

Introduction to Finite Element Analysis, Analysis of bio mechanical systems using Finite element methods, Graphical design. Ergonomics- Gait analysis, Design of work station, Sports biomechanics, Injury mechanics.

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Explain the mechanics of physiological systems.
- CO2. Analyze the biomechanical systems.
- CO3. Design orthopaedic applications.
- CO4. Describe the biomechanics of joints and implants
- CO5. Learn the modeling and ergonomics.

TEXT BOOKS:

1. Y.C. Fung, "Bio-Mechanics- Mechanical Properties of Tissues", Springer-Verlag, 1998.
2. Duane Knudson, "Fundamentals of Biomechanics", Second Edition Springer Science+Business Media, 2007
3. Marcelo Epstein, "The Elements of Continuum Biomechanics", ISBN: 978-1-119-99923-2, 2012.

REFERENCES:

1. Jay D. Humphrey, Sherry De Lange, "An Introduction to Biomechanics: Solids and Fluids, Analysis and Design", Springer Science+Business Media, 2004.
2. Shrawan Kumar, "Biomechanics in Ergonomics", Second Edition, CRC Press 2007.

PRACTICAL

513BMP01 - MICROPROCESSOR AND MICROCONTROLLER LABORATORY

OBJECTIVES:

The student should be made to:

- Introduce ALP concepts and features
- Write ALP for arithmetic and logical operations in 8086 and 8051
- Differentiate Serial and Parallel Interface
- Interface different I/Os with Microprocessors
- Be familiar with MASM

LIST OF EXPERIMENTS:

8086 Programs using kits and MASM

1. Basic arithmetic and Logical operations
2. Move a data block without overlap
3. Code conversion, decimal arithmetic and Matrix operations.
4. Floating point operations, string manipulations, sorting and searching
5. Password checking, Print RAM size and system date
6. Counters and Time Delay

Peripherals and Interfacing Experiments

7. Traffic light control
8. Stepper motor control
9. Digital clock
10. Key board and Display
11. Printer status
12. Serial interface and Parallel interface
13. A/D and D/A interface and Waveform Generation

8051 Experiments using kits and MASM

14. Basic arithmetic and Logical operations
15. Square and Cube program, Find 2's complement of a number
16. Unpacked BCD to ASCII

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Write ALP Programmes for fixed and Floating Point and Arithmetic
- CO2. Interface different I/Os with processor
- CO3. Generate waveforms using Microprocessors
- CO4. Execute Programs in 8051
- CO5. Explain the difference between simulator and Emulator


LAB EQUIPMENT FOR A BATCH OF 30 STUDENTS:

HARDWARE:

- 8086 development kits - 30 nos
- Interfacing Units - Each 10 nos
- Microcontroller - 30 nos

SOFTWARE:

- Intel Desktop Systems with MASM - 30 nos
- 8086 Assembler
- 8051 Cross Assembler


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513BMP02 - BIO MEDICAL INSTRUMENTATION LABORATORY

OBJECTIVES:

- To provide hands on training on Measurement of physiological parameters , biochemical parameters measurement and biosignal analysis.

LIST OF EXPERIMENTS:

1. Design and analysis of biological pre amplifiers
2. Recording of ECG signal and analysis
3. Recording of EMG-Signal
4. Recording of EEG-Signal
5. Recording of various physiological parameters using patient monitoring system and telemetry units.
6. Measurement of pH and conductivity.
7. Measurement and recording of peripheral blood flow
8. Measurement of visually evoked potential.
9. Study of characteristics of optical Isolation amplifier
10. Galvanic skin resistance (GSR) measurement

LAB REQUIREMENTS FOR A BATCH OF 30 STUDENTS:

- Multiparameter patient monitoring system : 1 No.
- EEG recorder with accessories for evoked studies : 1 No.
- ECG recorder : 1 No.
- EMG recorder : 1 No.
- pH meter, conductivity meter : 1 No.
- Blood flow measurement system using ultrasound transducer: 1 No.
- GSR measurement setup. : 1 No.
- Function Generators
- DSOs
- Regulated Power supplies
- Bread boards
- IC 741

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Design the amplifier for Bio signal measurements
CO2. Recording and analysis of bio signals



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617BMT03 - DIAGNOSTIC AND THERAPEUTIC EQUIPMENT - II

OBJECTIVES:

The student should be made to:

- Gather basic knowledge about measurements of parameters related to respiratory system
- Learn measurement techniques of sensory responses
- Understand different types and uses of diathermy units.
- Know ultrasound imaging technique and its use in diagnosis
- Know the importance of patient safety against electrical hazard

UNIT I RESPIRATORY MEASUREMENT SYSTEM

Instrumentation for measuring the mechanics of breathing – Spirometer -Lung Volume and vital capacity, measurements of residual volume, pneumotachometer – Airway resistance measurement, Whole body plethysmography, Intra-Alveolar and Thoracic pressure measurements, Apnea Monitor. Types of Ventilators – Pressure, Volume, Time controlled. Flow, Patient Cycle Ventilators, Humidifiers, Nebulizers, Inhalators.

UNIT II SENSORY MEASUREMENT

Psycho Physiological Measurements-for testing and sensory Responses, Electro oculograph, Electro retinograph, Audiometer-Pure tone, Speech. EGG (Electrogastrograph), galvanic skin resistance (GSR).

UNIT III DIATHERMY

IR and UV lamp and its application. Short wave diathermy, ultrasonic diathermy, Microwave diathermy, Electro surgery machine - Current waveforms, Tissue Responses, Electro surgical current level, Hazards and safety procedures.

UNIT IV ULTRASONIC TECHNIQUE

Diagnosis: Tissue Reaction, Basic principles of Echo technique, display techniques A, B and M mode, B Scan, Application of ultrasound as diagnostic tool – Echocardiogram, Echoencephalogram, abdomen, obstetrics and gynecology, ophthalmology.

UNIT V PATIENT SAFETY

Physiological effects of electricity – important susceptibility parameters – Macro shock – Micro shock hazards – Patient's electrical environment – Isolated Power system – Conductive surfaces – Electrical safety codes and standards – Basic Approaches to Protection against shock, Protection equipment design, Electrical safety analyzer – Testing the Electric system

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Explain about measurements of parameters related to respiratory system
- CO2. Describe the measurement techniques of sensory responses
- CO3. Analyze different types and uses of diathermy units
- CO4. Discuss ultrasound imaging techniques and its usefulness in diagnosis
- CO5. Outline the importance of patient safety against electrical hazard

TEXT BOOK:

1. Khandpur R.S, "Handbook of Biomedical Instrumentation", Tata McGraw Hill, New Delhi, 2003.

REFERENCES:

1. Leslie Cromwell, "Biomedical Instrumentation and Measurement", Prentice Hall of India, New Delhi, 2007
2. John G. Webster, "Medical Instrumentation Application and Design", John Willey and Sons, 2006.
3. Joseph J. Carr and John M. Brown, "Introduction to Biomedical Equipment Technology", Pearson Education, 2004.
4. Richard Aston "Principles of Biomedical Instrumentation and Measurement", Merrill Publishing Company, 1990.
5. L.A Geddas and L.E.Baker "Principles of Applied Biomedical Instrumentation" 2004.
6. John G. Webster, "Bioinstrumentation", John Willey and sons, New York, 2004.
7. Myer Kutz "Standard Handbook of Biomedical Engineering & Design", McGraw-Hill Publisher, 2003.

617BMT04 - PRINCIPLES OF DIGITAL SIGNAL PROCESSING

OBJECTIVES:

- To learn discrete Fourier transform and its properties
- To know the characteristics of IIR and FIR filters learn the design of infinite and finite impulse response filters for filtering undesired signals
- To understand Finite word length effects
- To study the concept of Multirate and adaptive filters

UNIT I DISCRETE FOURIER TRANSFORM

Discrete Signals and Systems- A Review – Introduction to DFT – Properties of DFT – Circular Convolution - Filtering methods based on DFT – FFT Algorithms – Decimation in time Algorithms, Decimation in frequency Algorithms – Use of FFT in Linear Filtering.

UNIT II IIR FILTER DESIGN

Structures of IIR – Analog filter design – Discrete time IIR filter from analog filter – IIR filter design by Impulse Invariance, Bilinear transformation, Approximation of derivatives – (LPF, HPF, BPF, BRF) filter design using frequency translation.

UNIT III FIR FILTER DESIGN

Structures of FIR – Linear phase FIR filter – Fourier Series - Filter design using windowing techniques (Rectangular Window, Hamming Window, Hanning Window), Frequency sampling techniques – Finite word length effects in digital Filters: Errors, Limit Cycle, Noise Power Spectrum.

UNIT IV FINITE WORDLENGTH EFFECTS

Fixed point and floating point number representations – ADC –Quantization- Truncation and Rounding errors - Quantization noise – coefficient quantization error – Product quantization error – Overflow error – Roundoff noise power - limit cycle oscillations due to product round off and overflow errors – Principle of scaling

UNIT V DSP APPLICATIONS

Multirate signal processing: Decimation, Interpolation, Sampling rate conversion by a rational factor – Adaptive Filters: Introduction, Applications of adaptive filtering to equalization.

OUTCOMES:

Upon completion of the course, students will be able to

- CO1. apply DFT for the analysis of digital signals & systems
- CO2. design IIR and FIR filters
- CO3. characterize finite Word length effect on filters
- CO4. design the Multirate Filters
- CO5. apply Adaptive Filters to equalization

TEXT BOOK:

1. John G. Proakis & Dimitris G.Manolakis, "Digital Signal Processing – Principles, Algorithms & Applications", Fourth Edition, Pearson Education / Prentice Hall, 2007.

REFERENCES:

1. Emmanuel C..Ifeachor, & Barrie.W.Jervis, "Digital Signal Processing", Second Edition, Pearson Education / Prentice Hall, 2002.
2. Sanjit K. Mitra, "Digital Signal Processing – A Computer Based Approach", Tata Mc Graw Hill, 2007.
3. A.V.Oppenheim, R.W. Schafer and J.R. Buck, "Discrete-Time Signal Processing", 8th Indian Reprint, Pearson, 2004.
4. Andreas Antoniou, "Digital Signal Processing", Tata Mc Graw Hill, 2006.

617BMT05 - ANALOG AND DIGITAL COMMUNICATION

OBJECTIVES:

The student should be made to:

- Understand analog and digital communication techniques
- Learn data and pulse communication techniques
- Be familiarized with source and Error control coding
- Gain knowledge on multi-user radio communication

UNIT I ANALOG COMMUNICATION

Noise: Source of Noise - External Noise- Internal Noise - Noise Calculation. Introduction to Communication Systems: Modulation – Types - Need for Modulation. Theory of Amplitude Modulation - Evolution and Description of SSB Techniques - Theory of Frequency and Phase Modulation – Comparison of various Analog Communication System (AM – FM – PM).

UNIT II DIGITAL COMMUNICATION

Amplitude Shift Keying (ASK) – Frequency Shift Keying (FSK) Minimum Shift Keying (MSK) –Phase Shift Keying (PSK) – BPSK – QPSK – 8 PSK – 16 PSK - Quadrature Amplitude Modulation (QAM) – 8 QAM – 16 QAM – Bandwidth Efficiency– Comparison of various Digital Communication System (ASK – FSK – PSK – QAM).

UNIT III DATA AND PULSE COMMUNICATION

Data Communication: History of Data Communication - Standards Organizations for Data Communication- Data Communication Circuits - Data Communication Codes - Error Detection and Correction Techniques - Data communication Hardware - serial and parallel interfaces.
Pulse Communication: Pulse Amplitude Modulation (PAM) – Pulse Time Modulation (PTM) – Pulse code Modulation (PCM) - Comparison of various Pulse Communication System (PAM – PTM – PCM)

UNIT IV SOURCE AND ERROR CONTROL CODING

Entropy, Source encoding theorem, Shannon fano coding, Huffman coding, mutual information, channel capacity, channel coding theorem, Error Control Coding, linear block codes, cyclic codes, convolution codes, viterbi decoding algorithm

UNIT V MULTI-USER RADIO COMMUNICATION

Advanced Mobile Phone System (AMPS) - Global System for Mobile Communications (GSM) - Code division multiple access (CDMA) – Cellular Concept and Frequency Reuse - Channel Assignment and Hand off - Overview of Multiple Access Schemes - Satellite Communication - Bluetooth.

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Apply analog and digital communication techniques
- CO2. Use data and pulse communication techniques
- CO3. Analyze Source and Error control coding
- CO4. Utilize multi-user radio communication
- CO5. Describe the multiuser radio communication

TEXT BOOK:

1. Wayne Tomasi, "Advanced Electronic Communication Systems", 6th Edition, Pearson Education, 2009.

REFERENCES:

1. Simon Haykin, "Communication Systems", 4th Edition, John Wiley & Sons, 2004
2. Rappaport T.S, "Wireless Communications: Principles and Practice", 2nd Edition, Pearson Education, 2007
3. H.Taub, D L Schilling and G Saha, "Principles of Communication", 3rd Edition, Pearson Education, 2007.
4. B. P.Lathi, "Modern Analog and Digital Communication Systems", 3rd Edition, Oxford University Press, 2007.
5. Blake, "Electronic Communication Systems", Thomson Delmar Publications, 2002.
6. Martin S.Roden, "Analog and Digital Communication System", 3rd Edition, Prentice Hall of India, 2002.
7. B.Sklar, "Digital Communication Fundamentals and Applications" 2nd Edition Pearson Education, 2007.

PRACTICAL

617BMP01 - DIGITAL SIGNAL PROCESSING LABORATORY

OBJECTIVES:

The student should be made to:

- To implement Linear and Circular Convolution
- To implement FIR and IIR filters
- To study the architecture of DSP processor
- To demonstrate Finite word length effect

LIST OF EXPERIMENTS:

MATLAB / EQUIVALENT SOFTWARE PACKAGE

1. Generation of sequences (functional & random) & correlation
2. Linear and Circular Convolutions
3. Spectrum Analysis using DFT
4. FIR filter design
5. IIR filter design
6. Multirate Filters
7. Equalization

DSP PROCESSOR BASED IMPLEMENTATION

8. Study of architecture of Digital Signal Processor
9. MAC operation using various addressing modes
10. Linear Convolution
11. Circular Convolution
12. FFT Implementation
13. Waveform generation
14. IIR and FIR Implementation
15. Finite Word Length Effect

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Carry out simulation of DSP systems
- CO2. Demonstrate their abilities towards DSP processor based implementation of DSP systems
- CO3. Analyze Finite word length effect on DSP systems
- CO4. Demonstrate the applications of FFT to DSP
- CO5. Implement adaptive filters for various applications of DSP

LAB EQUIPMENT FOR A BATCH OF 30 STUDENTS (2 students per system)

PCs with Fixed / Floating point DSP Processors (Kit / Add-on Cards) 15 Units

List of software required:

MATLAB with Simulink and Signal Processing Tool Box or Equivalent Software in desktop systems -15 Nos
Signal Generators (1MHz) – 15 Nos
CRO (20MHz) -15 Nos


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617BMP02 - DIAGNOSTIC AND THERAPEUTIC EQUIPMENT LABORATORY

OBJECTIVES:

- To provide practice on recording and analysis of different Bio potentials
- Study the function of different Therapeutic equipments.

LIST OF EXPERIMENTS:

1. Simulation of ECG – detection of QRS complex and heart rate
2. Study of shortwave and ultrasonic diathermy
3. Study of biotelemetry
4. Electrical safety measurements.
5. Measurement of Respiratory parameters using spirometry.
6. Study of medical stimulator.
7. Study of ESU – cutting and coagulation modes
8. Recording of Audiogram
9. Design of ECG amplifier, recording and analysis using Lab View

LAB REQUIREMENTS FOR 30 STUDENTS

Multioutput power supply (+15v, -15v, +30V variable, +5V , 2A) 2 Nos.

Short wave Diathermy 1 No.

Ultrasound diathermy 1 No.

Single parameter biotelemetry system 1 No.

Electrical Safety Analyser 1 No.

Spirometry with associated analysis system 1 No.

ECG Simulator 1 No.

Medical stimulator 1 No

Surgical diathermy with analyzer 1 No

Audiometer 1No

Lab View.

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. analyze the Bio medical signals
- CO2. check the safety of any medical
- CO3. have the knowledge about therapeutic equipments.



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617BMT07 - BIOMETRIC SYSTEMS

OBJECTIVES:

- To understand the technologies of fingerprint, iris, face and speech recognition
- To understand the general principles of design of biometric systems and the underlying trade-offs.
- To recognize personal privacy and security implications of biometrics based identification technology.
- To identify issues in the realistic evaluation of biometrics based systems.

UNIT I INTRODUCTION TO BIOMETRICS

Introduction and back ground – biometric technologies – passive biometrics – active biometrics – Biometric systems – Enrollment – templates – algorithm – verification – Biometric applications – biometric characteristics- Authentication technologies –Need for strong authentication - Protecting privacy and biometrics and policy – Biometric applications – biometric characteristics

UNIT II FINGERPRINT TECHNOLOGY

History of fingerprint pattern recognition - General description of fingerprints - Finger print feature processing techniques - fingerprint sensors using RF imaging techniques – fingerprint quality assessment – computer enhancement and modeling of fingerprint images – fingerprint enhancement – Feature extraction – fingerprint classification – fingerprint matching

UNIT III FACE RECOGNITION AND HAND GEOMETRY

Introduction to face recognition, Neural networks for face recognition – face recognition from correspondence maps – Hand geometry – scanning – Feature Extraction - Adaptive Classifiers - Visual-Based Feature Extraction and Pattern Classification - feature extraction – types of algorithm – Biometric fusion.

UNIT IV MULTIMODAL BIOMETRICS AND PERFORMANCE EVALUATION

Voice Scan – physiological biometrics –Behavioral Biometrics - Introduction to multimodal biometric system – Integration strategies – Architecture – level of fusion – combination strategy –training and adaptability – examples of multimodal biometric systems – Performance evaluation- Statistical Measures of Biometrics – FAR – FRR – FTE – EER – Memory requirement and allocation.

UNIT V BIOMETRIC AUTHENTICATION

Introduction - Biometric Authentication Methods - Biometric Authentication Systems – Biometric authentication by fingerprint -Biometric Authentication by Face Recognition. -. Expectation-Maximization theory - Support Vector Machines. Biometric authentication by fingerprint –biometric authentication by hand geometry- Securing and trusting a biometric transaction – matching location – local host - authentication server – match on card (MOC) – Multibiometrics and Two-Factor Authentication

OUTCOMES:

Upon the completion of the course, students will be able to:

- CO1. Demonstrate knowledge engineering principles underlying biometric systems.
- CO2. Analyze design basic biometric system applications.
- CO3. Design a system for face recognition
- CO4. Design a system for multimodal biometrics and performance evaluation
- CO5. Apply the concepts for biometric authentication

TEXT BOOKS:

1. James Wayman, Anil Jain, Davide Maltoni, Darlo Maio, "Biometric Systems, Technology Design and Performance Evaluation", Springer, 2005 (Units I, II, III & IV)
2. S.Y. Kung, S.H. Lin, M.W.Mak, "Biometric Authentication: A Machine Learning Approach" Prentice Hall, 2005(Unit V)

REFERENCES:

1. Paul Reid, "Biometrics for Network Security", Pearson Education, 2004.
2. Nalini K Ratha, Ruud Bolle, "Automatic fingerprint Recognition System", Springer, 2003
3. L C Jain, I Hayashi, S B Lee, U Halici, "Intelligent Biometric Techniques in Fingerprint and Face Recognition" CRC Press, 1999.
4. John Chirillo, Scott Blaul, "Implementing Biometric Security", John Wiley, 2003.
5. Arun A. Ross, Karthik Nanda Kumar, Anil K. Jain, "Handbook of Multibiometrics", Springer, 2006.

617BMP03 - COMMUNICATION AND SOFT SKILLS LAB

UNIT I LISTENING/ VIEWING SKILLS

Listening to lectures, discussions - talk shows - news programmes - interviews – instructions - dialogues – Speeches of different nationalities with focus on American and British accent – Inspiring speeches – telephonic conversations – discussion to answer different kinds of questions – Watching documentaries on personalities, places, socio-cultural events.

UNIT II SPEAKING SKILLS

Conversational skills – Interview skills – Making Presentations - Group Discussion – Introducing oneself and others – Role Play – Debate – Panel Discussion – telephonic communication - attending job interviews.

UNIT III READING SKILLS

Reading different genres of texts from Newspapers, Literature, Media, Technical – Vocabulary building – speed reading (skimming & scanning) – Reading online sources like e-books, e-journals and e-newspapers – critical reading – Facts and Fiction – Sumarizing & intrepretation.

UNIT IV WRITING SKILLS

Writing Job applications – cover letter – resume - emails – letters/ Recomendations and Instructions/ Writing for media on current events/ Report Writing/ English for National & International Examination (TOEFL, IELTS, GRE, IAS Language related)

UNIT V SOFT SKILLS & EMPLOYABILITY SKILLS

Motivation – Self Image – Goal Setting – Time management – Creative & Critical Thinking – Learning Style & Strategies – Gestures – Eye Contact,

LAB INFRASTRUCTURE

| Sl.No. | Description of equipment (Minimum Configuration) | Oty Required |
|--------|---|--------------|
| 1. | Server PIV SYSTEM • 1 GB RAM / 40 GB HDD • OS : Win 2000 server • Audio card with Headphones • JRE 1.3 | 1 No. |
| 2. | Client Systems • PIII System • 256 or 512 MB RAM / 40 GB HDD • OS : Win 2000 • Audio Card with headphones • JRE 1.3 | 60 Nos. |
| 3. | Handicam | 1 No. |
| 4. | Television 46" | 1 No. |
| 5. | Collar Mike | 1 No. |
| 6. | Cordless Mike | 1 No. |
| 7. | Audio Mixer | 1 No. |
| 8. | DVD recorder / Player | 1 No. |
| 9. | LCD projector with MP3/ CD/ DVD provision for Audio/video facility | 1 No. |

218PPP02 - PROGRAMMING FOR PROBLEM SOLVING USING C and PYTHON (Practical)

[The laboratory should be preceded or followed by a tutorial to explain the approach or algorithm to be implemented for the problem given.]

Tutorial 1: Study of Peripheral of Computer System

Lab 1: Identify the peripherals of a computer, components in a CPU and its functions.

Tutorial 2: Hardware & Software Troubleshooting

Lab 2: To identify improper assembly or defective peripherals and system software problems.

Tutorial 3: Problem solving using computers:

Lab 3: Familiarization with programming environment

Tutorial 4: Variable types and type conversions:

Lab 4: Simple computational problems using arithmetic expressions

Tutorial 5: Branching and logical expressions:

Lab 5: Problems involving if-then-else structures

Tutorial 6: Loops, while and for loops.

Lab 6: Iterative problems e.g., sum of series

Tutorial 7: 1D Arrays: searching, sorting:

Lab 7: 1D Array manipulation

Tutorial 8: 2D arrays and Strings

Lab 8: Matrix problems, String operations

Tutorial 9: Functions, call by value:

Lab 9: Simple functions

Tutorial 10 & 11: Numerical methods (Root finding, numerical differentiation, numerical integration):

Lab 10 and 11: Programming for solving Numerical methods problems

Tutorial 12: Recursion, structure of recursive calls

Lab 12: Recursive functions

Tutorial 13: Pointers, structures and dynamic memory allocation

Lab 13: Pointers and structures

Laboratory Outcomes

- To formulate the algorithms for simple problems
- To translate given algorithms to a working and correct program
- To be able to correct syntax errors as reported by the compilers
- To be able to identify and correct logical errors encountered at runtime
- To be able to write iterative as well as recursive programs
- To be able to represent data in arrays, strings and structures and manipulate them through a program
- To be able to declare pointers of different types and use them in defining self-referential structures.
- To be able to create, read and write to and from simple textfiles.



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III Semester

318BMT01 - PROBABILITY THEORY AND STOCHASTIC PROCESSES

Objectives:

1. To introduce the solution methodologies for Random Variables with applications in engineering
2. To provide an overview of probability and Stochastic Processes to engineers

Module 1:

Sets and set operations; Probability space; Conditional probability and Bayes theorem; Combinatorial probability and sampling models

Module 2:

Discrete random variables, probability mass function, probability distribution function, example random variables and distributions; Continuous random variables, probability density function, probability distribution function, example distributions;

Module 3:

Joint distributions, functions of one and two random variables, moments of random variables; Conditional distribution, densities and moments; Characteristic functions of a random variable; Markov, Chebyshev and Chernoff bounds;

Module 4:

Random sequences and modes of convergence (everywhere, almost everywhere, probability, distribution and mean square); Limit theorems; Strong and weak laws of large numbers, central limit theorem.

Module 5:

Random process. Stationary processes. Mean and covariance functions. Ergodicity. Transmission of random process through LTI. Power spectral density.

Text/Reference Books:

1. H. Stark and J. Woods, "Probability and Random Processes with Applications to Signal Processing," Third Edition, Pearson Education
2. A. Papoulis and S. Unnikrishnan Pillai, "Probability, Random Variables and Stochastic Processes," Fourth Edition, McGraw Hill.
3. K. L. Chung, Introduction to Probability Theory with Stochastic Processes, Springer International
4. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability, UBS Publishers,
5. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Stochastic Processes, UBS Publishers
6. S. Ross, Introduction to Stochastic Models, Harcourt Asia, Academic Press.
7. Dr. G. Balaji, Probability & Random Processes, 17th edition, G. Balaji Publishers, 2017.

Course Outcomes:

At the end of this course students will demonstrate the ability to

- Understand representation of random signals
- Investigate characteristics of random processes
- Make use of theorems related to random signals
- To understand propagation of random signals in LTI systems


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318BMT02 - BIO CHEMISTRY

OBJECTIVES:

The student should be:

- Introduced to Biochemistry
- Familiarized with the Classification, structure and properties of carbohydrates, Lipids, Protein and Enzyme.

Lecture 01 : Basics of Experimental Biochemistry

Lecture 02 : Amino Acid Titration and pI determination

Lecture 03 : Spectroscopic techniques

Lecture 04 : Protein folding and denaturation studies

Lecture 05 : Chromatographic techniques

Lecture 06 : Gel electrophoresis of DNA and proteins

Lecture 07 : Isolation and characterization of proteins

Lecture 08 : Enzyme Kinetics

Lecture 09 : Isolation and characterization of DNA

Lecture 10 : Basics of rDNA technology

Lecture 11 : Protein ligand interactions

Lecture 12 : Immunoassay techniques

OUTCOMES:

At the end of the Course, The students will be able to,

- Explain the fundamentals of biochemistry

Online:

<https://swayam.gov.in/course/1405-biochemistry>

TEXT BOOKS:

1. David.W.Martin, Peter.A.Mayes , Victor. W.Rodwell, "Harper's Review of Biochemistry", LANGE Medical Publications, 1981
2. Keith Wilson & John Walker, "Practical Biochemistry - Principles & Techniques", Oxford University Press, 2009.

REFERENCES:

1. Trevor palmer, "Understanding Enzymes", Ellis Horwood Ltd. 1991.
2. Pamela.C.Champe&Richard.A.Harvey, "Lippincott Biochemistry Lippincott's Illustrated Reviews", Raven publishers,1994.


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318BMT03- BIOSIGNALS AND SYSTEMS

OBJECTIVES:

The student should be made to:

- To analyze the continuous time discrete time signals & systems and its biosignal applications.

Module I: Basics of Discrete and Continuous Time Signals and Systems

Generation, representation of discrete time signals and continuous time signals, standard discrete time signals, standard continuous time signals-Classification of signals: Continuous time(CT) ,Discrete time (DT) signals -Mathematical operations on CTS and DTS-scaling, folding,time shifting, addition and multiplication. Classification of systems: static and dynamic systems, time invariant and time variant, linear and nonlinear systems, causal and non-causal systems, stable and unstable systems. Basic bio signal measurements

Module II: Analysis of Continuous Time Signals and System

Fourier series analysis-trigonometric fourier series, Cosine fourier series, Exponential fourier series, Fourier transform analysis, Laplace transform analysis, Poles and zeros, Analysis of differential equation- impulse response, Transfer function, Frequency response

Module III: Convolution and Correlation of Discrete

Convolution-graphical method, properties, methods of performing linear convolution, Circular convolution-circular representation and circular shift of DT signals-procedure for evaluating circular convolution,

linear convolution via circular convolution, methods of computing circular convolution, Sectioned convolution-overlap add method, Overlap save method, Inverse system, deconvolution Correlation-autocorrelation and cross correlation

Module IV: Transforms of Discrete Time Signals and Systems

Z transform-properties-region of convergence- representation of poles and zeros in z transform, Inverse z transform- residue method, Partial fraction method, Discrete time fourier transform-properties, frequency response of LTI DT signals, Frequency response of first order, second order DT signals, Analysis of impulse response using differential equation, Relation between Z transform and DTFT, Introduction to discrete fourier transform, Inverse discrete fourier transform.

Module V: Realization and Biosignal Applications

Introduction to discrete time Infinite impulse response (IIR) and finite impulse response (FIR) systems, Structure for realization of IIR systems-direct form-I, direct form-II, Cascade form, parallel form of IIR system, Structure for realization of FIR systems-direct form, cascade and linear phase realization of FIR systems, Neural Firing rate analysis, Linearized model and system equations for immune response

Outcomes:

At the end of the course, the students will be able to:

- Classify the continuous time signals and systems and discrete-time signals and systems
- Analyze the continuous time signals using fourier series and fourier transforms
- Compute the convolution and correlation of discrete time systems.
- Understand the concepts of z-transform and discrete Fourier transform
- Analyze the discrete time IIR and FIR systems by using suitable structures and bio signal applications

TEXT BOOK:

1. Allan V.Oppenheim, S.Wilsky and S.H.Nawab, —Signals and Systems, Pearson, 2015.(Unit 1-V)

REFERENCES:

1. B. P. Lathi, —Principles of Linear Systems and Signals, Second Edition, Oxford, 2009.
2. R.E.Zeimer, W.H.Tranter and R.D.Fannin, —Signals & Systems - Continuous and Discrete, Pearson, 2007.
3. John Alan Stuller, —An Introduction to Signals and Systems, Thomson, 2007.

318BMT04 – ELECTRON DEVICES AND CIRCUITS

OBJECTIVES:

The student should be made to:

- Understand the structure of basic electronic devices.
- Be exposed to active and passive circuit elements.
- Familiarize the operation and applications of transistor like BJT and FET.
- Explore the characteristics of amplifier gain and frequency response.
- Learn the required functionality of positive and negative feedback systems.

Module 1 PN JUNCTION DEVICES

PN junction diode –structure, operation and V-I characteristics, diffusion and transition capacitance - Rectifiers – Half Wave and Full Wave Rectifier,– Display devices- LED, Laser diodes, Zener diode characteristics- Zener Reverse characteristics – Zener as regulator

Module 2 TRANSISTORS AND THYRISTORS

BJT, JFET, MOSFET- structure, operation, characteristics and Biasing UJT, Thyristors and IGBT - Structure and characteristics.

Module 3 AMPLIFIERS

BJT small signal model – Analysis of CE, CB, CC amplifiers- Gain and frequency response – MOSFET small signal model– Analysis of CS and Source follower – Gain and frequency response- High frequency analysis.

Module 4 MULTISTAGE AMPLIFIERS AND DIFFERENTIAL AMPLIFIER

BIMOS cascade amplifier, Differential amplifier – Common mode and Difference mode analysis – FET input stages – Single tuned amplifiers – Gain and frequency response – Neutralization methods, power amplifiers –Types (Qualitative analysis).

Module 5 FEEDBACK AMPLIFIERS AND OSCILLATORS

Advantages of negative feedback – voltage / current, series , Shunt feedback –positive feedback – Condition for oscillations, phase shift – Wien bridge, Hartley, Colpitts and Crystal oscillators.

OUTCOMES:

At the end of the course, the students will be able to:

- Explain the structure and working operation of basic electronic devices.
- Able to identify and differentiate both active and passive elements
- Analyze the characteristics of different electronic devices such as diodes and transistors
- Choose and adapt the required components to construct an amplifier circuit.
- Employ the acquired knowledge in design and analysis of oscillators

TEXT BOOKS:

1. David A. Bell ,|Electronic devices and circuits|, Oxford University higher education, 5th edition 2008.
2. Sedra and smith, —Microelectronic circuits|,7th Ed., Oxford University Press

REFERENCES:

1. Balbir Kumar, Shail.B.Jain, —Electronic devices and circuits| PHI learning private limited, 2nd edition 2014.
2. Thomas L.Floyd, —Electronic devices| Conventional current version, Pearson prentice hall, 10th Edition, 2017.
3. Donald A Neamen, —Electronic Circuit Analysis and Design| Tata McGraw Hill, 3rd Edition, 2003.
4. Robert L.Boylestad, —Electronic Devices and Circuit Theory|, 2002.
5. Robert B. Northrop, —Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation|, CRC Press, 2004.

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318BMP01 – ELECTRON DEVICES AND CIRCUITS LABORATORY

OBJECTIVES:

The student should be made:

- To learn the characteristics of basic electronic devices such as Diode, BJT, FET, SCR
- To understand the working of RL, RC and RLC circuits
- To gain hand on experience in Thevinin & Norton theorem, KVL & KCL, and Super Position Theorems

LIST OF EXPERIMENTS

1. Characteristics of PN Junction Diode
2. Zener diode Characteristics & Regulator using Zener diode
3. Common Emitter input-output Characteristics
4. Common Base input-output Characteristics
5. FET Characteristics
6. SCR Characteristics
7. Clipper and Clamper & FWR
8. Verifications of Thevinin & Norton theorem
9. Verifications of KVL & KCL
10. Verifications Of Super Position Theorem
11. Verifications of maximum power transfer & reciprocity theorem
12. Determination Of Resonance Frequency of Series & Parallel RLC Circuits
13. Transient analysis of RL and RC circuits

LABORATORY REQUIREMENTS

BC 107, BC 148, 2N2646, BFW10 - 25 each 1N4007, Zener diodes - 25 each Resistors, Capacitors, Inductors - sufficient quantities Bread Boards - 15 Nos CRO (30MHz) – 10 Nos. Function Generators (3MHz) – 10 Nos. Dual Regulated Power Supplies (0 – 30V) – 10 Nos

OUTCOMES:

At the end of the course, the student should be able to:

- Analyze the characteristics of basic electronic devices
- Design RL and RC circuits
- Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems


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318BMT05 - ANATOMY AND HUMAN PHYSIOLOGY

OBJECTIVES:

The student should be made to:

- Know basic structural and functional elements of human body.
- Learn organs and structures involving in system formation and functions.
- Understand all systems in the human body.

Module I BASIC ELEMENTS OF HUMAN BODY

Cell: Structure and organelles - Functions of each component in the cell. Cell membrane –transport across membrane – origin of cell membrane potential – Action potential. **Tissue:** Types – Specialized tissues – functions.

Module II SKELETAL AND RESPIRATORY SYSTEM

Skeletal system: Bone types and functions – Joint - Types of Joint - Cartilage and functions. **Respiratory System:** Components of respiratory system – Respiratory Mechanism. Types of respiration - Oxygen and carbon dioxide transport and acid base regulation

Module III CIRCULATORY SYSTEM

Blood composition - functions of blood – functions of RBC. WBC types and their functions. Blood groups – importance of blood groups – identification of blood groups. Blood vessels- Structure of heart – Properties of Cardiac muscle – Conducting system of heart – Cardiac cycle – ECG - Heart sound - Volume and pressure changes and regulation of heart rate –Coronary Circulation. Factors regulating Blood flow.

Module IV URINARY AND SPECIAL SENSORY SYSTEM

Urinary system: Structure of Kidney and Nephron. Mechanism of Urine formation and acid base regulation – Urinary reflex – Homeostasis and blood pressure regulation by urinary system. **Special senses:** Eye and Ear.

Module V NERVOUS SYSTEM

Structure of a Neuron – Types of Neuron. Synapses and types. Conduction of action potential in neuron. Brain – Divisions of brain lobes - Cortical localizations and functions - EEG. Spinal cord – Tracts of spinal cord - Reflex mechanism – Types of reflex. Autonomic nervous system and its functions.

OUTCOMES:

At the end of the course, the students should be made to:

- Describe basic structural and functional elements of human body.
- Explain organs and structures involving in system formation and functions.
- Identify all systems in the human body.

TEXT BOOK:

1. Elaine.N. Marieb , “Essential of Human Anatomy and Physiology”, Eight Edition, Pearson Education, New Delhi ,2007.

REFERENCES:

1. Gillian Pocock, Christopher D. Richards, The human Body – An introduction for Biomedical and Health Sciences, Oxford University Press, USA, 2009
2. William F.Ganong, “Review of Medical Physiology”, 22nd Edition, Mc Graw Hill, New Delhi, 2005
3. Eldra Pearl Solomon, “Introduction to Human Anatomy and Physiology”, W.B. Saunders Company, Harcourt Brace Jovanovich, 2003.
4. Guyton & Hall, “Medical Physiology”, 12th Edition, Elsevier Saunders, 2010

318BMP02 - ANATOMY AND HUMAN PHYSIOLOGY (Practical)

OBJECTIVES:

To provide practice on:

- Estimation and quantification of biomolecules.
- Separation of macromolecules.

LIST OF EXPERIMENTS:

1. General tests for carbohydrates, proteins and lipids.
2. Preparation of serum and plasma from blood.
3. Study of blood groups
3. Electrophoresis
4. Thin layer chromatography
5. ESR, PCV.
6. MCH, MCV, MCHC.
7. Estimation of hemoglobin.
8. Enumeration of RBC
9. Differential Leucocyte count.
10. Identification of blood groups.

OUTCOMES: Upon completion of the course, students will be able to:

- Do estimation and interpret the changes in biomolecules.
- Separate and analyze the importance of macromolecules.

LAB REQUIREMENT FOR A BATCH OF 30 STUDENTS:

Requirement for a batch of 30 students

- Spectrophotometer 1 No
- Colorimeter 2 Nos.
- pH meter 1 No
- Weighing balance 1 No
- Refrigerator 1 No
- Vortex Shaker 2 Nos.
- SDS gel electrophoresis 1 No
- TLC, ready TLC plates 1 No
- Wintrobe's tube 2 Nos.
- Centrifuge Normal 1 No
- Centrifuge Cooling 1 No
- Microslides 2 packets
- Lancet 5 boxes
- Microscope 1 No
- Neubaur's Chamber 2 Nos.
- Heparinized Syringe 1 box
- Haemoglobinometer 1 No
- Capillary tubes 1 box
- Ophthalmoscope (direct & Indirect) 1 No
- Blood grouping kit 1


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318BMT06- ENVIRONMENTAL SCIENCE

OBJECTIVES:

To the study of nature and the facts about environment.

- To find and implement scientific, technological, economic and political solutions to environmental problems.
- To study the interrelationship between living organism and environment.
- To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.
- To study the dynamic processes and understand the features of the earth's interior and surface.
- To study the integrated themes and biodiversity, natural resources, pollution control and waste management.

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY

Definition, scope and importance of Risk and hazards; Chemical hazards, Physical hazards, Biological hazards in the environment – concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers-Oxygen cycle and Nitrogen cycle – energy flow in the ecosystem – ecological succession processes – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds
Field study of simple ecosystems – pond, river, hill slopes, etc.

UNIT II ENVIRONMENTAL POLLUTION

Definition – causes, effects and control measures of: (a) Air pollution (Atmospheric chemistry- Chemical composition of the atmosphere; Chemical and photochemical reactions in the atmosphere - formation of smog, PAN, acid rain, oxygen and ozone chemistry;- Mitigation procedures- Control of particulate and gaseous emission, Control of SO₂, NO_x, CO and HC) (b) Water pollution : Physical and chemical properties of terrestrial and marine water and their environmental significance; Water quality parameters – physical, chemical and biological; absorption of heavy metals - Water treatment processes. (c) Soil pollution - soil waste management; causes, effects and control measures of municipal solid wastes – (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards–role of an individual in prevention of pollution – pollution case studies – Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

Actual Activities:

- (i) Plantation
- (ii) Shutting down the fans and ACs of the campus for an hour or so
- (iii) Drive for segregation of waste

UNIT III NATURAL RESOURCES

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and overutilization of surface and ground water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Energy Conversion processes – Biogas – production and uses, anaerobic digestion; case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Introduction to Environmental Biochemistry: Proteins –Biochemical degradation of pollutants, Bioconversion of pollutants.

Field study of local area to document environmental assets – river/forest/grassland/hill/mountain

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

From unsustainable to sustainable development – urban problems related to energy, water conservation, rain water harvesting, watershed management – Disaster prevention and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization-

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environmental ethics: Issues and possible solutions – 12 Principles of green chemistry- nuclear accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production act – Air act – Water act – Wildlife protection act – Forest conservation act – The Biomedical Waste (Management and Handling) Rules; 1998 and amendments- scheme of labeling of environmentally friendly products (Ecomark). enforcement machinery involved in environmental legislation- central and state pollution control boards- disaster management: floods, earthquake, cyclone and landslides. Public awareness.

Awareness Activities:

- (i) Small group meetings about water management , promotion of recycle use, generation of less waste, avoiding electricity waste.
- (ii) Lectures from experts

UNIT V HUMAN POPULATION AND THE ENVIRONMENT

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare –Environmental impact analysis (EIA)- -GIS-remote sensing-role of information technology in environment and human health – Case studies.

OUTCOMES:

Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.

- Public awareness of environment at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions.
- Development and improvement in standard of living has lead to serious environmental disasters.

TEXT BOOKS:

1. Gilbert M.Masters, "Introduction to Environmental Engineering and Science", 2nd Edition, Pearson Education, 2004.
2. Benny Joseph, „Environmental Science and Engineering“, Tata Mc Graw-Hill, New Delhi, 2006.

REFERENCES:

1. R.K. Trivedi, "Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standard", Vol. I and II, Enviro Media.
2. Cunningham, W.P. Cooper, T.H. Gorhani, "Environmental Encyclopedia", Jaico Publ., House, Mumbai, 2001.
3. Dharmendra S. Sengar, "Environmental law", Prentice Hall of India PVT LTD, New Delhi, 2007.
4. Rajagopalan, R, "Environmental Studies-From Crisis to Cure", Oxford University Press 2005



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318BMP03 - PCB DESIGN LABORATORY

OBJECTIVES:

The students should be made to,

- To make familiarize the electronic components and basic electronic instruments.
- To make students familiar with PCB design and various processor involved.
- To provide in-depth core knowledge in the fabrication of printed.
- To provide the knowledge in assembling and testing of the PCB based electronic circuits.
- To Provide knowledge on designing of real time PCB boards.

List of Experiments.

1. Study of electronic components.
 - a. Resistors, Capacitors, Inductors
 - b. Transformers, diodes, Transistors.
 - c. Integrated circuits, Display, Switches.
2. Study of instruments and equipment (DMM, Power Supply, CRO, FG)
3. Generation of CAM files for single side PCB (Measuring Voltage Drop)
4. Generation of CAM for single side PCB (Full wave rectifier)
5. PCB Assembly and Testing (Measuring Voltage Drop)
6. PCB Assembly and Testing (Full wave rectifier)
7. Study of single side PCB fabrication process by photo resist Method.


LAB REQUIREMENTS FOR A BATCH OF 30 STUDENTS

1. Computers with ORCAD Software – 30 Nos.
2. Multimeter- 15 Nos.

OUTCOMES:

At the end of the course the students should be made to,

- Design lay out for a circuit with suitable dimensions of the device.
- Validate the design before implementation.


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IV SEMESTER

418BMT01 – BIOCONTROL SYSTEMS

OBJECTIVES

The student should be made:

- To understand the concept behind feedback and continuum in various systems and subsystems.
- To analyse the systems in time and frequency domain and to understand the concept of stability
- To apply mathematical modelling principles in understanding the various fundamental biological systems
- To analyse biological system models using MATLAB

Module I INTRODUCTION

Open and Closed loop Systems, Modeling and Block Diagrams, Block diagram and signal flow graph representation of systems, reduction of block diagram and signal flow graph, Introduction to Physiological control systems- Illustration, Linear models of physiological systems, Difference between engineering and physiological control system.

Module II TIME RESPONSE ANALYSIS

Step and impulse responses of first order and second order systems, time domain specifications of first and second order systems, steady state error constants, Definition of stability, Routh- Hurwitz criteria of stability, root locus technique, construction of root locus and study of stability.

Module III FREQUENCY RESPONSE ANALYSIS

Frequency domain specifications - Polar plots, Bode plots, Nyquist plot, Nyquist stability criterion, closed loop stability, Constant M and N circles, Nichol's chart.

Module IV BIOLOGICAL SYSTEM MODELS

Distributed parameter versus lumped parameter models, Model development of Cardiovascular system- Heart model-circulatory model, Pulmonary mechanics- Lung tissue visco-elasticity-chest wall- airways, Interaction of Pulmonary and Cardiovascular models, Static analysis of physiological systems – Regulation of cardiac output, Regulation of ventilation.

Module V BIOLOGICAL CONTROL SYSTEM ANALYSIS

Simple models of muscle stretch reflex action, Study of steady state analysis of muscle stretch reflex action, Study of transient response analysis of neuromuscular reflex model action, Study of frequency response of circulatory control model, Stability analysis of Pupillary light reflex.

OUTCOMES:

At the end of the course the student will be able to:

- Understand the need for mathematical modeling of various systems, representation of systems in block diagrams and signal flow graphs and are introduced to biological control systems
- Analyze the time response of various systems and discuss the concept of system stability
- Analyze the frequency response characteristics of various systems using different charts
- Understand the concept of modeling basic physiological systems
- Comprehend the application aspects of time and frequency response analysis in physiological control systems.

TEXT BOOKS:

1. I.J. Nagarath and M. Gopal —Control Systems Engineering", Fifth Edition, Anshan Publishers, 2008.(UNIT
2. Michael C K Khoo, —Physiological Control SystemsII, IEEE Press, Prentice Hall of India, 2005

REFERENCES:

1. Benjamin C. Kuo, —Automatic Control SystemsII, Prentice Hall of India, 1995
2. John Enderle Susan Blanchard, Joseph Bronzino —Introduction to Biomedical EngineeringII, second edition, Academic Press, 2005.
3. Richard C. Dorf, Robert H. Bishop, —Modern control systemsII, Pearson, 2004.

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| | | | | | | |
|----------|------------------------------------|---|---|---|---|-------------|
| 418BMT02 | BIOMATERIALS AND ARTIFICIAL ORGANS | L | T | P | C | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

PREREQUISITE: 318BMT05 Anatomy and Human Physiology

COURSE OBJECTIVES:

- To study the characteristics and classification of biomaterials.
- To understand the response of biomaterials in living system.
- To learn about the polymeric materials and composites in tissue replacements.
- To describe the principles of implant design with a case study
- To explain the implant design parameters and solution in use
- To know the compatibility and functioning of artificial organs inside the living system.

UNIT 1 INTRODUCTION TO BIO-MATERIALS

Definition and classification of bio-materials, mechanical properties, visco elasticity, biomaterial performance, body response to implants, wound healing, blood compatibility, Nano scale phenomena, Metallic implants - Stainless steels, co-based alloys, Ti-based alloys, shape memory alloy, nanostructured metallic implants, degradation and corrosion, ceramic implant – bio inert, biodegradable or bioresorbable, bioactive ceramics, nanostructured bio ceramics.

UNIT 2 POLYMERIC IMPLANT MATERIALS

Polymerization, factors influencing the properties of polymers, polymers as biomaterials, biodegradable polymers, Bio polymers: Collagen, Elastin and chitin. Medical Textiles, Materials for ophthalmology: contact lens, intraocular lens. Membranes for plasma separation and Blood oxygenation, electro spinning: a new approach.

UNIT 3 TISSUE REPLACEMENT IMPLANTS

Small intestinal sub mucosa and other decellularized matrix biomaterials for tissue repair: Extra cellular Matrix. Soft tissue replacements, sutures, surgical tapes, adhesive, Percutaneous and skin implants, maxillofacial augmentation, Vascular grafts, hard tissue replacement Implants, joint replacements, tissue scaffolding and engineering using Nano biomaterials.

UNIT 4 ARTIFICIAL ORGANS & PRINCIPLES OF IMPLANT DESIGN

Introduction, outlook for organ replacements, design consideration, evaluation process. TRANSPLANTS:-Overview, Immunological considerations, Blood transfusions, individual organs – kidney, liver, heart and lung, bone marrow, cornea. Principles of implant design, Clinical problems requiring implants for solution, Tissue engineering, scaffolds, cells and regulators criteria for materials selection.

UNIT 5 BLOOD INTERFACING IMPLANTS & TESTING OF BIOMATERIAL

Neural and neuromuscular implants, heart valve implants, heart and lung assist

418BMT03 – BIO SENSORS AND MEASUREMENTS

OBJECTIVES:

The student should be made to:

- Understand the purpose of measurement, the methods of measurements, errors associated with measurements.
- Know the principle of transduction, classifications and the characteristics of different transducers and study its Biomedical applications.
- Know the different display and recording devices.

UNIT I - MEASUREMENT SYSTEM AND BASICS OF TRANSDUCER

Measurements and generalized measurement system: Static characteristics, accuracy, precision, linearity, hysteresis, threshold, dynamic range- Dynamic Characteristics-calibration, standards and AC/DC bridges, Transducer: Basics, Classification, Characteristics and Choice, POT, Thermistor, Thermocouple, Temperature compensation.

UNIT II - MEASUREMENT OF NON-ELECTRICAL QUANTITIES

LVDT, Strain gauges, Transducer: Pressure, Capacitive, Inductive, Electrochemical, Piezo-electric, Hall effect, Opto-electronic Digital encoding/digital, Fiber-optic, Flow and liquid level, and Electrochemical transducer.

UNIT III - SIGNAL GENERATORS AND SIGNAL ANALYZER

Signal generator: AF, Pulse, AM, FM, Function, and Sweep frequency generator, Signal analyzer Wave, Spectrum, Logic, and Distortion analyzer.

UNIT IV - DIGITAL DATA DISPLAY AND RECORDING SYSTEM

DVM and millimeters, Frequency, Period measurement, Time interval and pulse width measurement, Graphic recorders-strip chart, X-Y recorder, Magnetic tape recorder, CRO basics: CRT, General purpose oscilloscope, Dual trace, Dual beam, Sampling oscilloscope, Digital storage oscilloscope.

UNIT V - MEDICAL APPLICATIONS OF SENSORS

Gas sensor, Microbial sensor, electro analytical sensor, Enzyme based sensor-- Glucose sensor, Electronic nose- halitosis, Advances in sensor technology: Lab-on-a -chip, Smart sensor, MEMS and Nano sensor.

OUTCOMES:

At the end of the course, the student should be able to:

- Describe the purpose and methods of measurements
- Explain different display and recording devices for various applications.

TEXT BOOK:

1. A.K.Sawhney, "Electrical & Electronics Measurement and Instrumentation", 10th edition, Dhanpat Rai & Co, New Delhi, 2010.
2. Cooper, "Electronic Instrumentation and Measurement techniques" Prentice Hall of India, 1998

REFERENCES:

1. Ernest O Doebelin and Dhanesh N Manik, Measurement systems, Application and design, 5th edition, Mc Graw-Hill, 2007.
2. Khandpur R.S, "Handbook of Biomedical Instrumentation", Tata McGraw-Hill, New Delhi, 2003.
3. Leslie Cromwell, "Biomedical Instrumentation and measurement", Prentice hall of India, New Delhi, 2007.
4. John G. Webster, "Medical Instrumentation Application and Design", John Wiley and sons, New York, 2004.
5. L.A Geddas and L.E.Baker, "Principles of Applied Biomedical Instrumentation" John Wiley and Sons, Third Edition, Reprint 2008.
6. Albert D.Helfrick and William D. Cooper. Modern Electronic Instrumentation and Measurement Techniques", Prentice Hall of India, 2007.

418BMT05 - ANALOG AND DIGITAL ICs

OBJECTIVES: The students should be made,

- To study the application of analog ICs in the designing circuit.
- To study the applications of these Digital ICs.
- To understand the basic of the Digital systems.
- To study the design of the various functional circuits using these ICs.

Module I NUMBER SYSTEMS AND LOGIC GATES

Decimal, Binary, Octal and Hexadecimal Numbers.-Conversion between these number systems.- Complements r's and (r-1)'s complements.- subtraction using complements – Encoding numbers and characters using Binary digits. –Binary coded Decimal –Gray code - Binary to Gray code conversion – ASCII Code. Logic gates – Truth tables – NOT, AND, OR, NOR, NAND, XOR, XNOR - Boolean Laws and theorems – Solving Boolean expressions, Truth Tables and Logic circuits – The Karnaugh Map – half adder, full adder, Multiplexers and Demultiplexers - Decoders and encoders. Coding of Combination Circuits in verilog.

Module II REGISTERS AND COUNTERS

Flip Flops – RS, D, T, JK Flip Flops – Characteristic equations, exciting tables – JK Master – Slave flip-flop – Universal shift register. Design of modulo-N counters – counter design using state diagram. sequential circuit design with verilog.

Module III OPERATIONAL AMPLIFIERS

The characteristics of Ideal Operation – slew rate, offset voltage, bias current, CMRR, bandwidth - equivalent circuit of an op-Amp – virtual ground concept – Linear applications of op-amp – inverting and noninverting amplifier, summing, subtracting, averaging amplifier - voltage to current converter– current to voltage converter – Differential amplifiers – differentiator and integrator. Nonlinear applications – comparator – Schmitt Triggers – Precision Diode Half wave and full wave rectifiers – Average detectors – peak detector

Module IV ACTIVE FILTERS AND SIGNAL GENERATOR

Active filters (first and second order) – Low pass, high pass, band pass filters, band reject filters (notch filters). Oscillators - RC Phase shift and Weinbridge. Waveform generators - Square, triangular and saw tooth.

Module V TIMER, PLL, A/D AND D/A CONVERTERS

555 Timer (internal diagram) and its applications – monostablemultivibrator, astablemultivibrator. Phase locked Loop (565 - block diagram approach) and its applications - Frequency multiplication, Frequency translation, voltage to frequency and frequency to voltage converters. DAC – Binary weighted DAC and R-2R DAC. ADC – single slope and dual slope ADCs, successive approximation ADC

OUTCOMES:

At the end of the course, the student is able to:

- Explain the application of analog ICs in the designing circuit.
- Do applications of Digital ICs.
- Understand the basic of the Digital systems.
- Design various functional circuits using these ICs.

TEXT BOOKS:

1. M. Morris Mano , “Digital Logic and Computer design “ Prentice Hall 1994.
2. Ramakant A. Gayakwad , “Op-AMP and Linear Ics”, Prince Hall, 1994

REFERENCES:

1. Robert B.Northrop, “Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation”, CRC Press, 2004.
2. Sergio Franco, “Design with Operational Amplifiers and analog Integrated circuits” McGraw- Hills, 2003.
3. Millman J and Halkias .C., “Integrated Electronics”, TMH, 2007.
4. John. F. Wakerly, “Digital Design Principles and Practices”, Fourth Edition, Pearson Education, 2007
5. Charles H. Roth, Jr, “Fundamentals of Logic Design”, Fourth Edition, Jaico Books, 2002

418BMP02 - ANALOG AND DIGITAL ICs LABORATORY

OBJECTIVES:

The students should be made to,

- To expose the students to linear and integrated circuits
- To understand the basics of linear integrated circuits and available ICs
- To understand characteristics of operational amplifier.
- To apply operational amplifiers in linear and nonlinear applications.
- To acquire the basic knowledge of special function IC.
- To use SPICE software for circuit design

LIST OF EXPERIMENTS DESIGN AND TESTING OF

1. Inverting, Non inverting and Differential amplifiers.
2. Integrator and Differentiator.
3. Instrumentation amplifier
4. Active low-pass, High-pass and band-pass filters.
5. Astable & Monostable multivibrators and Schmitt Trigger using op-amp.
6. RC Phase shift and Wien bridge oscillators using op-amp.
7. Astable and monostable multivibrators using NE555 Timer.
8. PLL characteristics and its use as Frequency Multiplier.
9. DC power supply using LM317 and LM723.

LIST OF DIGITAL EXPERIMENTS

10. Design and implementation of code converters using logic gates (i) BCD to excess-3 code and vice versa (ii) Binary to gray and vice-versa
11. Design and implementation of 4 bit binary Adder/ Subtractor and BCD adder using IC 7483
12. Design and implementation of Multiplexer and De-multiplexer using logic gates
13. Design and implementation of encoder and decoder using logic gates
14. Construction and verification of 4 bit ripple counter and Mod-10 / Mod-12 Ripple counters
15. Design and implementation of 3-bit synchronous up/down counter
16. Implementation of SISO, SIPO, PISO and PIPO shift registers using Flip- flops.
17. SPICE Simulation studies.

OUTCOMES:

At the end of the course, the student should be able to:

- Design oscillators and amplifiers using operational amplifiers.
- Design filters using Opamp and perform experiment on frequency response.
- Analyse the working of PLL and use PLL as frequency multiplier.
- Design DC power supply using ICs.
- Acquire knowledge in using SPICE


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418BMT05 - PATHOLOGY AND MICROBIOLOGY

OBJECTIVES:

The student should be made to:

- Gain a knowledge on the structural and functional aspects of living organisms.
- Know the etiology and remedy in treating the pathological diseases.
- Empower the importance of public health.

Module I CELL DEGENERATION, REPAIR AND NEOPLASIA

Cell injury and Necrosis, Apoptosis, Intracellular accumulations, Pathological calcification, cellular adaptations of growth and differentiation, Inflammation and Repair including fracture healing, Neoplasia, Classification, Benign and Malignant tumours, carcinogenesis, spread of tumours. Autopsy and biopsy.

Module II FLUID AND HEMODYNAMIC DERRANGEMENTS

Edema, normal hemostasis, thrombosis, disseminated intravascular coagulation, embolism, infarction, shock. Hematological disorders-Bleeding disorders, Leukaemias, Lymphomas.

Module III MICROSCOPES

Light microscope – bright field, dark field, phase contrast, fluorescence, Electron microscope (TEM & SEM). Preparation of samples for electron microscope. Staining methods – simple, gram staining and AFB staining.

Module IV MICROBIAL CULTURES

Morphological features and structural organization of bacteria, growth curve, identification of bacteria, culture media and its types, culture techniques and observation of culture.

Module V IMMUNOLOGY

Natural and artificial immunity, opsonization, phagocytosis, inflammation, Immune deficiency syndrome, antibodies and its types, antigen and antibody reactions, immunological techniques: immune diffusion, immuno electrophoresis, RIA and ELISA, monoclonal antibodies. Disease caused by bacteria, fungi, protozoal, virus and helminthes.

OUTCOMES:

At the end of the course, the student should be able to:

- Analyze structural and functional aspects of living organisms.
- Explain the function of microscope
- Discuss the importance of public health.
- Describe methods involved in treating the pathological diseases.

TEXT BOOKS:

1. Ramzi S Cotran, Vinay Kumar & Stanley L Robbins, "Pathologic Basis of Diseases", 7th edition, WB Saunders Co. 2005 (Units I & II).
2. Prescott, Harley and Klein, "Microbiology", 5th edition, McGraw Hill, 2002 (Units III, IV & V).

REFERENCES:

1. Underwood JCE: General and Systematic Pathology Churchill Livingstone, 3rd edition, 2000.
2. Ananthanarayanan & Panicker, "Microbiology" Orientblackswan, 2005.
3. Dubey RC and Maheswari DK. "A Text Book of Microbiology" Chand & Company Ltd, 2007

418BMP03 - PATHOLOGY AND MICROBIOLOGY LABORATORY

OBJECTIVES:

The student should be made to:

- Use Compound microscope
- Practice on chemical examinations, Cryoprocessing, Histopathological examinations etc

LIST OF EXPERIMENTS:

1. Urine physical and chemical examination (protein, reducing substances, ketones, bilirubin and blood)
2. Study of parts of compound microscope
3. Histopathological slides of benign and malignant tumours.
4. Manual paraffin tissue processing and section cutting (demonstration)
5. Cryo processing of tissue and cryosectioning (demonstration)
6. Basic staining – Hematoxylin and eosin staining.
7. Special stains – cresyl fast Blue (CFV)- Trichrome – oil red O – PAS
8. Simple stain.
9. Gram stain.
10. AFB stain.
11. Slides of malarial parasites, micro filaria and leishmaniadonovani.
12. Haematology slides of anemia and leukemia. Study of bone marrow charts.
13. Bleeding time and clotting time.

OUTCOMES:

- Student can perform practical experiments on tissue processing, cryoprocessing, staining processes etc.

LAB EQUIPMENTS FOR 30 STUDENTS:

Wax dispenser 1 No
Slide warming 1 No
Microtome 1 No
Microscope
Microphotographic unit 1 No
Slides 1 box
Coverslip 1 box
Distillation Unit 1 No
Water bath normal 1 No
Incubator 1 No
Autoclave 1 No
Oven 1 No



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OBJECTIVES:

The student should be made to:

- Understand analog and digital communication techniques
- Learn data and pulse communication techniques
- Be familiarized with source and Error control coding
- Gain knowledge on multi-user radio communication

MODULE I ANALOG COMMUNICATION

Noise: Source of Noise - External Noise- Internal Noise - Noise Calculation. Introduction to Communication Systems: Modulation – Types - Need for Modulation. Theory of Amplitude Modulation - Evolution and Description of SSB Techniques - Theory of Frequency and Phase Modulation – Comparison of various Analog Communication System (AM – FM – PM).

MODULE II DIGITAL COMMUNICATION

Amplitude Shift Keying (ASK) – Frequency Shift Keying (FSK) Minimum Shift Keying (MSK) –Phase Shift Keying (PSK) – BPSK – QPSK – 8 PSK – 16 PSK - Quadrature Amplitude Modulation (QAM) – 8 QAM – 16 QAM – Bandwidth Efficiency– Comparison of various Digital Communication System (ASK– FSK – PSK – QAM).

MODULE III DATA AND PULSE COMMUNICATION

Data Communication: History of Data Communication - Standards Organizations for Data Communication- Data Communication Circuits - Data Communication Codes - Error Detection and Correction Techniques - Data communication Hardware - serial and parallel interfaces. **Pulse Communication:** Pulse Amplitude Modulation (PAM) – Pulse Time Modulation (PTM) – Pulse code Modulation (PCM) - Comparison of various Pulse Communication System (PAM – PTM – PCM)

MODULE IV SOURCE AND ERROR CONTROL CODING

Entropy, Source encoding theorem, Shannon fano coding, Huffman coding, mutual information, channel capacity, channel coding theorem, Error Control Coding, linear block codes, cyclic codes, convolution codes, viterbi decoding algorithm

MODULE V MULTI-USER RADIO COMMUNICATION

Advanced Mobile Phone System (AMPS) - Global System for Mobile Communications (GSM) - Code division multiple access (CDMA) – Cellular Concept and Frequency Reuse - Channel Assignment and Hand off - Overview of Multiple Access Schemes - Satellite Communication - Bluetooth.

OUTCOMES:

At the end of the course, the student should be able to:

- Apply analog and digital communication techniques
- Use data and pulse communication techniques
- Analyze Source and Error control coding
- Utilize multi-user radio communication

TEXT BOOK:

1. Wayne Tomasi, “Advanced Electronic Communication Systems”, 6th Edition, Pearson Education, 2009.

REFERENCES:

1. Simon Haykin, “Communication Systems”, 4th Edition, John Wiley & Sons, 2004
2. Rappaport T.S, "Wireless Communications: Principles and Practice", 2nd Edition, Pearson Education, 2007
3. H.Taub, D L Schilling and G Saha, “Principles of Communication”, 3rd Edition, Pearson Education, 2007.
4. B. P. Lathi, “Modern Analog and Digital Communication Systems”, 3rd Edition, Oxford University Press, 2007.
5. Blake, “Electronic Communication Systems”, Thomson Delmar Publications, 2002.
6. Martin S.Roden, “Analog and Digital Communication System”, 3rd Edition, Prentice Hall of India, 2002.
7. B.Sklar, “Digital Communication Fundamentals and Applications” 2nd Edition Pearson Education, 2007.

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318BMPT05 - BIOMEDICAL OPTICS

OBJECTIVES:

The objectives of this course are

- To provide a possibility for the student to acquire knowledge about the physical properties of light and its impact and interaction with biological tissue in terms of optical properties, instrumentation in photonics, through the use and design of appropriate optical components
- To understand the engineering and practical applications of optics related to diagnostics, sensing and therapeutics of the human body.

UNIT I OPTICAL PROPERTIES OF THE TISSUES

Refraction, Scattering, absorption, light transport inside the tissue, tissue properties, Light interaction with tissues, opto-thermal interaction, fluorescence.

UNIT II INSTRUMENTATION IN PHOTONICS

Instrumentation for absorption, scattering and emission measurements, excitation light sources - high pressure arc lamp, solid state LEDs, Lasers, optical filters, solid state detectors - optical detectors - time resolved and phase resolved detectors.

UNIT III SURGICAL APPLICATIONS OF LASERS

Laser in tissue welding, lasers in dermatology, lasers in ophthalmology, otolaryngology, Urology, Lasers in Neurosurgery, Laser Treatment of Breast Tumors, Therapeutic Applications of Lasers in Gastroenterology.

UNIT IV DIAGNOSTIC APPLICATIONS

Optical coherence tomography, Elastography, Fluorescence Imaging, Raman Imaging, FLIM, X-Ray Diagnostic Techniques, Speckle Correlometry, Near-Field Imaging in Biological and Biomedical Applications

UNIT V THERAPEUTIC APPLICATIONS

Phototherapy, Photodynamic therapy (PDT) - Principle and mechanism - Oncological and non-oncological applications of PDT - Biostimulation effect - applications.

OUTCOME:

Able to know the various optical properties of tissue as well as application of lasers in medical fields

REFERENCES:

1. Mark E. Brezinski, —Optical Coherence Tomography: Principles and Applications, Academic Press, 2006.
2. Markolf H. Niemz, —Laser-Tissue Interaction Fundamentals and Applications, Springer, 2007.
3. Paras N. Prasad, —Introduction to Bio photonics, A. John Wiley and sons, Inc. Publications, 2003.
4. R. Splinter and B.A. Hooper, —An Introduction to Bio-Medical Optics, Taylor and Francis, 2007.
5. Tuan Vo Dinh, —Biomedical photonics – Handbook, CRC Press LLC, 2003.

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318BMPT07 - HOSPITAL WASTE MANAGEMENT

OBJECTIVES:

The students should be made to:

- Study the sterilization methods
- Understand the importance of disposal of waste
- Learn the controls applied to waste management

UNIT I INTRODUCTION

Introduction, definition of general and hazardous health care waste and diseases, Infectious waste, genotoxic waste, waste sharps, biomedical waste categories categorization and composition of Biomedical waste

UNIT II PRINCIPLES OF STERILIZATION

Disease Transmission - Disinfection methods - Sterilization - steam sterilizing (Auto claving) - Microwave (Non-burn treatment technology). Mechanical Treatment & Chemical Disinfections

UNIT III DISPOSAL OF WASTE

Disposal methods - Incinerator - Hazardous waste, radioactive waste, liquid waste destruction - landfill.

UNIT IV CONTROLS APPLIED TO WASTE MANAGEMENT

Environmental pollution, its causes, consequences, mitigation and remedies. Emission control, Instrumentation and monitoring, Crematories

UNIT V ENVIRONMENTAL SAFETY, RISKS & PUBLIC ISSUES.

Risk management in hospitals - Environment issues in hospitals - Risk analysis Legislation, policies and law regarding environment on Health care waste management. Biomedical waste management and handling rules, 1998 and its amendment

OUTCOMES:

At the end of this course, the students should be able to:

- Explain Disposal methods
- Discuss health care waste management
- Explain environmental pollution

REFERENCES:

1. C.R. Brunner, Medical Waste Disposable Handbook, Incorporated, Consultant in Corporation, Virginia, 2000.
2. C.R. Brunner, Incorporated Consultant in Corporation Incentration System Handbook, Virginia.


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III Semester

318BMPT01 – REHABILITATION ENGINEERING

OBJECTIVES:

To develop an understanding of the various rehabilitation aids so as to enable the student to design and apply them with confidence, to help the challenged people.

UNIT I INTRODUCTION TO REHABILITATION

Definition, Concept of Rehabilitation: Types of Physical Impairments, Principles of Assistive Technology Assessment, Principles of Rehabilitation Engineering- Key Engineering Principles, Key Ergonomic Principles, Engineering Concepts in Sensory & Motor rehabilitation.

UNIT II ORTHOTICS & PROSTHETICS IN REHABILITATION

Types of orthosis-FO,AFO,KAFO,HKAFO and prosthesis ,Partial Foot Prostheses- Foot-ankle assembly, Trans femoral Prostheses, Prosthetic Hand, Advance and automated prosthetics and orthosis, Externally powered and Controlled orthotics & prosthetics, -FES system, Restoration of Hand function, Restoration of standing and walking.

UNIT III MOBILITY AIDS

Electronic Travel Appliances (ETA) : Path Sounder, Laser Cane, Ultrasonic Torch, Sonic Guide, Light Probes, Nottingham Obstacle Sensors, Electro cortical Prosthesis, Polarized Ultrasonic Travel aids, Materials used for wheel chairs, Type of Wheel Chairs, design of wheel Chair, Walking frames, Parallel bars, Rollators, Quadripods, Tripods & walking sticks, Crutches.

UNIT IV AUDITORY AND SPEECH ASSIST DEVICES

Types of deafness, hearing aids, application of DSP in hearing aids, Cochlear implants, Voice synthesizer, speech trainer

UNIT V SENSORY AUGMENTATION AND SUBSTITUTIONS

Classification of Visual Impairments, Prevention and cure of visual impairments, Visual Augmentation, Tactile vision substitution, auditory substitution and augmentation, tactile auditory substitution, Assistive devices for the visual impaired

OUTCOME:

The student will have the knowledge about various rehabilitation aids available and the issues associated with the use of these aids

REFERENCES:

1. Joseph D.Bronzino,The Biomedical Engineering Handbook,Third Edition: Three Volume Set,CRC Press,2006
2. MacLachlan M. and Gallagher P. Enabling Technologies – Body Image and Body Function, Churchill Livingstone, 2004.
3. Mann W.C. (ed). Smart Technology for Aging, Disability, and Independence – The State of The Science, Wiley, New Jersey, 2005.
4. Muzumdar A. Powered Upper Limb Prostheses – Control, Implementation and Clinical Application. Springer, 2004.
5. Rory A Cooper, An Introduction to Rehabilitation Engineering, Taylor & Francics ,CRC press,2006


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213BMPT02 - DIAGNOSTIC AND THERAPEUTIC EQUIPMENT

OBJECTIVES:

- To know the various biopotential recordings so as to enable students to record various biosignals.
- To know the various functional blocks present in cardiac care units so that the students can handle these equipments with care and safety.
- To develop an understanding of the physiotherapy and diathermy equipment so that the student can learn to operate.
- To study the concept of various assist devices so as to enable the students to develop new assist devices.
- To introduce the recent trends in field of diagnostic and therapeutic equipments.

UNIT I CARDIAC CARE UNITS

defibrillators and demerits, DC Defibrillator, asynchronous and synchronous DC pump, electronic monitoring of functional parameter. Spirometer, Respiratory volume measurement, pneumograph, artificial respirator – IPR type, functioning, Pulse defibrillators. Pacemakers – Need for pacemaker, different types and their comparison, batteries for pacemakers. Defibrillator- Need, AC, Hazards and safety issues, patient monitoring system.

UNIT II ASSIST DEVICES

Heart lung machines - Need for the unit, functioning of bubble, disc type and membrane type oxygenators, fingerpump, roller Oximetry. Indication and Principle of Hemodialysis, Membrane, Dialysate, Different types of hemodialysers, Monitoring Systems, Wearable Artificial Kidney, Implanting Type, Audiometer.

UNIT III STIMULATORS

Electrical stimulators: Strength-duration curve, types of stimulators, an electrodiagnostic /therapeutic stimulator. Nerve-muscle stimulator: peripheral nerve stimulator, Ultrasonic stimulators, stimulators for pain and relief.

UNIT V PATIENT MONITORING SYSTEMS

Patient monitoring system – ICU, post operative, ICCU, single channel telemetry, multichannel telemetry. Transmission of Biosignals over telephone lines. Digital central monitoring systems for patient monitoring. Computer based arrhythmia detection system.

UNIT V RECENT DEVICES

Principles and application of thermography, Detection circuits, Principles of cryogenic Technique and application, principles of Fiber optics cables, Endoscopy, Laparoscopy, principles of Lithotripsy.

COURSE OUTCOME: The student will have knowledge in the use of medical equipment in the hospitals

REFERENCES:

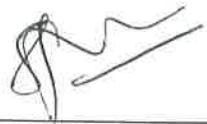




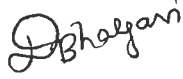

1. Albert M Cook and Webster J G – Therapeutic medical devices Prentice Hall New York 1982
2. Heinz Kresse – Handbook of Electro medicine. John Wiley & Sons – Chrchester – 1985
3. Webster J.G Medical Instrumentation application and design – John Wiley and sons New York 3rd edition 1999
4. Jacobson B and Webster J G Medical and Clinical Engineering – Prentice Hall of India New Delhi 1999
5. Leslie Cromwell , Fred J.Weibell and Erich A.Pfeiffer - Biomedical Instrumentation Prentice Hall New Delhi 2000
6. Joseph J Carr and John M Brown – Introduction to Biomedical equipment Technology - Pearson Education 4th edition New Delhi 2001.
7. Khandpur R.S Hand Book of Biomedical Instrumentation – Tata McGraw Hill publication , New Delhi 2nd edition 2003
8. John Denis Enderle, Joseph D. Bronzino, Susan M. Blanchard, 'Introduction to Biomedical Engineering:'Academic Press, 2005 , 2nd Edition

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MINUTES OF THE 18th MEETING OF THE BOARD OF STUDIES IN COMPUTER SCIENCE AND ENGINEERING

Held on 21.08.2018
Members Present

| S.No | Name | Designation | Member | Signature |
|------|-----------------------------|---|-----------------|---|
| 1. | Dr.S.Pushpa | Professor & Head | Chairperson |  |
| 2. | Dr. K. Thirunadana Sikamani | Professor | Member |  |
| 3. | Dr. P. Subhashini | Assistant Professor | Internal Member |  |
| 4. | Mr. K. Suresh Babu | Assistant Professor | Internal Member |  |
| 5. | Mr. R.D. Madhusudha Rao | Regional Manager, Career Education, IBM Chennai | External Member |  |
| 6. | Dr. D. Bhargavi | Assoc. Prof, School of Computer and Engineering Vellore Institute of Technology Chennai | External Member |  |
| 7. | Mr. V. Shyamal Szhunmugam, | Senior Software Engineer, Capgemini India Pvt. Ltd., (Alumni) | External Member |  |




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Chairperson

- 18.1 Considered the minutes of the 17th meeting of Board of Studies in Computer Science and Engineering held on 13.03.2018.

RESOLVED that the minutes of the 17th meeting of Board of Studies in Computer Science and Engineering held on 13.03.2018 be confirmed

- 18.2 Reviewed the Regulation and Syllabi of B.E (Computer Science and Engineering) programmes under the Regulations 2018 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.E (Computer Science and Engineering) programmes under the Regulations 2018 with Choice Based Credit System (CBCS) to be continued taking into consideration of the suggestions and remarks given by the members to include the new course "218CHT05 Environmental Science". (Appendix - I).

- 18.3 Reviewed the Regulation and Syllabi of B.E (Computer Science and Engineering) programmes under the Regulations 2013 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.E(Computer Science and Engineering) programmes under the Regulations 2013 with Choice Based Credit System (CBCS) be continued.

- 18.4 Reviewed the Regulation and Syllabi of M.E. (CSE) under the Regulations 2018 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of M.E. (CSE) under the Regulations 2018 with Choice Based Credit System (CBCS) be continued

- 18.5 Reviewed the Regulation and Syllabi of M.E. (CSE) under the Regulations 2013 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of M.E. (CSE) under the Regulations 2013 with Choice Based Credit System (CBCS) be continued.

- 18.6 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.E (CSE) programme under the Regulations 2018 & 2013 and M.E. (CSE) under the Regulations 2018 & 2013 developed having relevance to the



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local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

- 18.7 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.E (CSE) under the Regulations 2018 & 2013 and M.E. (CSE) under the Regulations 2018 & 2013

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.E (CSE) under the Regulations 2018 & 2013 and M.E. (CSE) under the Regulations 2018 & 2013 to be approved.

- 18.8 Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.E (CSE) and M.E. (CSE).

RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on "Artificial Intelligence and Real World Applications" be approved for the upcoming semester (2018-19 – Even semester).


- 18.9 Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – II).

Date: 21.08.2018


Chairman




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Appendix - I

**B.E. (Computer Science and Engineering)
Regulations 2018
CHOICE BASED CREDIT SYSTEM**

III SEMESTER

| CodeNo. | CourseTitle | L | T | P | C | Marks | | |
|--------------|--|-----------|----------|-----------|-----------|------------|------------|------------|
| | | | | | | CA | EA | Total |
| 318CST01 | Probability and Statistics | 4 | 0 | 0 | 4 | 25 | 75 | 100 |
| 318CST02 | Object Oriented Programming | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 318CST03 | Data Structure and Algorithms | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 318CST04 | Analog Electronic Circuits | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 318CST05 | Digital Electronics | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 318CSP01 | Object Oriented Programming Lab | 0 | 0 | 2 | 1 | 25 | 75 | 100 |
| 318CSP02 | Data Structure and Algorithms Lab | 0 | 0 | 2 | 1 | 25 | 75 | 100 |
| 318CSP03 | Analog Electronic Circuits Lab | 0 | 0 | 2 | 1 | 25 | 75 | 100 |
| 318CSP04 | Digital Electronics Lab | 0 | 0 | 2 | 1 | 25 | 75 | 100 |
| 318CSP05 | Humanities I (Soft Skills and Personality Development I) | 0 | 0 | 2 | 1 | 25 | 75 | 100 |
| Total | | 16 | 0 | 10 | 21 | 200 | 600 | 800 |

IV SEMESTER

| CodeNo. | CourseTitle | L | T | P | C | Marks | | |
|--------------|--|-----------|----------|-----------|-----------|------------|------------|------------|
| | | | | | | CA | EA | Total |
| 418CST01 | Discrete Mathematics | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 418CST02 | Operating Systems | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 418ECT03 | Microprocessor and Microcontroller | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 418CST04 | Object Oriented Software Engineering | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 418CST05 | Computer Organization and Architecture | 3 | 0 | 0 | 3 | 25 | 75 | 100 |
| 418ECP01 | Circuit and Simulation Integrated Lab | 0 | 0 | 4 | 2 | 25 | 75 | 100 |
| 418ECP02 | Microprocessor and Microcontroller Lab | 0 | 0 | 4 | 2 | 25 | 75 | 100 |
| 418ECP03 | Linear Integrated Circuits Lab | 0 | 0 | 4 | 2 | 25 | 75 | 100 |
| 418ECP04 | Internship-1 | 0 | 0 | 0 | 2 | 25 | 75 | 100 |
| Total | | 15 | 0 | 12 | 23 | 225 | 675 | 900 |

Overall percent age change for B.E (Computer Science and Engineering): 36.7%



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Appendix – II

M.E. (Computer Science and Engineering) Regulations 2018 CHOICE BASED CREDIT SYSTEM

318CSPT05 - SOFTWARE QUALITY ASSURANCE AND TESTING

COURSE OBJECTIVES:

- To understand the basics of testing, test planning & design and test team organization
- To study the various types of test in the life cycle of the software product.
- To build design concepts for system testing and execution
- To learn the software quality assurance ,metrics, defect prevention techniques
- To learn the techniques for quality assurance and applying for applications.

UNIT I SOFTWARE TESTING - CONCEPTS, ISSUES, AND TECHNIQUES

Quality Revolution, Verification and Validation, Failure, Error, Fault, and Defect, Objectives of Testing, Testing Activities, Test Case Selection White-Box and Black ,test Planning and design, Test Tools and Automation, . Power of Test. Test Team Organization and Management-Test Groups, Software Quality Assurance Group ,System Test Team Hierarchy, Team Building.

UNIT II SYSTEM TESTING

System Testing - System Integration Techniques-Incremental, Top Down Bottom Up Sandwich and Big Bang, Software and Hardware Integration, Hardware Design Verification Tests, Hardware and Software Compatibility Matrix Test Plan for System Integration. Built-in Testing. functional testing - Testing a Function in Context. Boundary Value Analysis, Decision Tables. acceptance testing - Selection of Acceptance Criteria, Acceptance Test Plan, Test Execution Test. software reliability - Fault and Failure, Factors Influencing Software, Reliability Models

UNIT III SYSTEM TEST CATEGORIES

System test categories Taxonomy of System Tests, Interface Tests Functionality Tests. GUI Tests, Security Tests Feature Tests, Robustness Tests, Boundary Value Tests Power Cycling Tests Interoperability Tests, Scalability Tests, Stress Tests, Load and Stability Tests, Reliability Tests, Regression Tests, Regulatory Tests.
Test Generation from FSM models- State-Oriented Model. Finite-State Machine Transition Tour Method, Testing with State Verification. Test Architectures-Local, distributed, Coordinated, Remote. system test design- Test Design Factors Requirement Identification, modeling a Test Design Process Test Design Preparedness, Metrics, Test Case Design Effectiveness. system test execution- Modeling Defects, Metrics for Monitoring Test Execution .Defect Reports, Defect Causal Analysis, Beta testing, measuring Test Effectiveness.

UNIT IV SOFTWARE QUALITY

Software quality - People's Quality Expectations, Frameworks and ISO-9126, McCall's Quality Factors and Criteria - Relationship. Quality Metrics. Quality Characteristics ISO 9000:2000 Software Quality Standard. Maturity models- Test Process Improvement ,Testing Maturity Model.

UNIT V SOFTWARE QUALITY ASSURANCE

Quality Assurance - Root Cause Analysis, modeling, technologies, standards and methodologies for defect prevention. Fault Tolerance and Failure Containment - Safety Assurance and Damage Control, Hazard analysis using fault-trees and event-trees. Comparing Quality Assurance Techniques and Activities. QA Monitoring and Measurement, Risk Identification for Quantifiable Quality Improvement. Case Study: FSM-Based Testing of Web-Based Applications.



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COURSE OUTCOMES:

Upon completion of this course, the students should be able to

- CO1: Perform functional and nonfunctional tests in the life cycle of the software product.
- CO2: Understand system testing and test execution process.
- CO3: Identify defect prevention techniques and software quality assurance metrics.
- CO4: Apply techniques of quality assurance for typical applications.

REFERENCES:

1. Software Testing And Quality Assurance-Theory and Practice, Kshirasagar Nak Priyadarshi Tripathy, John Wiley & Sons Inc, 2008
2. Software Quality Engineering: Testing, Quality Assurance, and Quantifiable Improvement, Jeff Tian, John Wiley & Sons, Inc., Hoboken, New Jersey. 2005.
3. Software Quality Assurance - From Theory to Implementation, Daniel Galin, Pearson Education Ltd UK, 2004
4. Software Quality Assurance, Milind Limaye, TMH ,New Delhi, 2011




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318CSPT08 – SOCIAL NETWORK ANALYSIS

COURSE OBJECTIVES:

- To understand the components of the social network.
- To model and visualize the social network.
- To mine the users in the social network.
- To understand the evolution of the social network.
- To know the applications in real time systems.

UNIT I INTRODUCTION

Introduction to Web - Limitations of current Web – Development of Semantic Web – Emergence of the Social Web – Statistical Properties of Social Networks -Network analysis - Development of Social Network Analysis - Key concepts and measures in network analysis - Discussion networks - Blogs and online communities - Web-based networks.

UNIT II MODELING AND VISUALIZATION

Visualizing Online Social Networks - A Taxonomy of Visualizations - Graph Representation - Centrality- Clustering - Node-Edge Diagrams - Visualizing Social Networks with Matrix-Based Representations- Node-Link Diagrams - Hybrid Representations - Modelling and aggregating social network data – Random Walks and their Applications –Use of Hadoop and Map Reduce - Ontological representation of social individuals and relationships.

UNIT III MINING COMMUNITIES

Aggregating and reasoning with social network data, Advanced Representations – Extracting evolution of Web Community from a Series of Web Archive - Detecting Communities in Social Networks - Evaluating Communities – Core Methods for Community Detection & Mining - Applications of Community Mining Algorithms - Node Classification in Social Networks.

UNIT IV EVOLUTION

Evolution in Social Networks – Framework - Tracing Smoothly Evolving Communities - Models and Algorithms for Social Influence Analysis - Influence Related Statistics - Social Similarity and Influence - Influence Maximization in Viral Marketing - Algorithms and Systems for Expert Location in Social Networks - Expert Location without Graph Constraints - with Score Propagation – Expert Team Formation - Link Prediction in Social Networks - Feature based Link Prediction – Bayesian Probabilistic Models - Probabilistic Relational Models.

UNIT V APPLICATIONS

A Learning Based Approach for Real Time Emotion Classification of Tweets, A New Linguistic Approach to Assess the Opinion of Users in Social Network Environments, Explaining Scientific and Technical Emergence Forecasting, Social Network Analysis for Biometric Template Protection

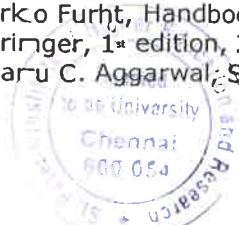
COURSE OUTCOMES:

Upon Completion of the course, the students should be able to

- CO1:Work on the internal components of the social network CO2:Model and visualize the social network
CO3:Mine the behaviour of the users in the social network
CO4:Predict the possible next outcome of the social network
CO5:Apply social network in real time applications

REFERENCES:

1. Ajith Abraham, Aboul Ella Hassanien, Václav Snášel, Computational Social Network Analysis: Trends, Tools and Research Advances, Springer, 2012
2. Borko Furht, Handbook of Social Network Technologies and Applications, Springer, 1st edition, 2011
3. Charu C. Aggarwal, Social Network Data Analytics, Springer, 2014



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4. Giles, Mark Smith, John Yen, Advances in Social Network Mining and Analysis, Springer, 2010.
5. Guandong Xu , Yanchun Zhang and Lin Li, Web Mining and Social Networking Techniques and applications, Springer, 1st edition, 2012
6. Przemyslaw Kazienko, Nitesh Chawla, Applications of Social Media and Social Network Analysis, Springer, 2015




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318CSPT13 - MOBILE APPLICATION DEVELOPMENT

COURSE OBJECTIVES:

This course aims to:

- Introduce mobile applications
- Design of embedded systems
- Multimedia and web access applications
- Establishing Android development environment

UNIT I INTRODUCTION

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.

UNIT II BASIC DESIGN

Introduction – 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 – Achieving quality constraints – performance, usability, security, availability and modifiability.

UNIT III 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.

UNIT IV ANDROID

Introduction – Establishing the development environment – Android architecture – Activities and views – Interacting with UI – Persisting data using SQLite – Packaging and deployment – Interaction with server side applications – Using Google Maps, GPS and Wifi – Integration with social media applications.

UNIT V IOS


Introduction to Objective C – iOS features – UI implementation – Touch frameworks – Data persistence using Core Data and SQLite – Location aware applications using Core Location and Map Kit – Integrating calendar and address book with social media application – Using Wifi - iPhone marketplace.

COURSE OUTCOMES:

Upon completion of the course, the students should be able to:

- CO1: Describe the requirements for mobile applications.
CO2: Explain the challenges in mobile application design and development. CO3: Develop design for mobile applications for specific requirements.




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CO4;Implement the design using Android SDK.

CO5:Implement the design using Objective C and iOS.

CO6:Deploy mobile applications in Android and iPhone marketplace for distribution.

REFERENCES:

1. Charlie Collins, Michael Galpin and Matthias Kappler, Android in Practise, DreamTech, 2012.
2. David Mark, Jack Nutting, Jeff LaMarche and Frederic Olsson, Beginning iOS 6 Development: Exploring the iOS SDK, Apress, 2013.
3. <http://developer.android.com/develop/index.html>.
4. James Dovey and Ash Furrow, Beginning Objective C, Apress, 2012.
5. Jeff McWherter and Scott Gowell, "Professional Mobile Application Development", Wrox, 2012.
6. Reto Meier, Professional android Development, Wiley-India Edition, 2012.




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St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH

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AVADI, CHENNAI - 600 054.

MINUTES OF THE 18th MEETING OF THE BOARD OF STUDIES IN ELECTRONICS AND COMMUNICATION ENGINEERING

Held on 21.08.2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|------------------|---|--------------------|---|
| 1. | Dr.G.P.Ramesh | Professor & Head | Chairman |  |
| 2. | Mrs.T.Anne Ramya | Assistant Professor | Internal Member |  |
| 3. | Mrs.R.Gomathi | Assistant Professor | Internal Member |  |
| 4. | Mrs.R.Nirmala | Assistant Professor | Internal Member |  |
| 5. | Dr.N.R. Shankar | Professor, AMS Engineering College,(External) | External Member |  |
| 6. | Dr. S.Murugan | Director, Vee Eee Technologies (Industry) | External Member |  |
| 7. | Mr.K.Girinath | Senior Engineer, Flextronics (Alumni) | External Member |  |



Chairman

HEAD

Department of ECE

St. Peter's Institute of Higher Education and Research
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Avadi, Chennai-600 054.



Registrar

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- 18.1** Considered the minutes of the 17th meeting of Board of Studies in Electronics and Communication Engineering held on 13.03.2018.

RESOLVED that the minutes of the 17th meeting of Board of Studies in Electronics and Communication Engineering held on 13.03.2018 be confirmed

- 18.2** Reviewed the Regulation and Syllabi of B.E (Electronics and Communication Engineering) programmes under the Regulations 2018 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.E (Electronics and Communication Engineering) programmes under the Regulations 2018 with Choice Based Credit System (CBCS) to be continued.

- 18.3** Reviewed the Regulation and Syllabi of B.E (Electronics and Communication Engineering) programmes under the Regulations 2015 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.E (Electronics and Communication Engineering) programmes under the Regulations 2015 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the new elective course "615ECT10- Digital Image Processing". (Appendix - I).

- 18.4** Reviewed the Regulation and Syllabi of M.E. (Communication Systems) under the Regulations 2018 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of M.E. (Communication Systems) under the Regulations 2018 with Choice Based Credit System (CBCS) be continued

- 18.5** Reviewed the Regulation and Syllabi of M.E. (Communication Systems) under the Regulations 2013 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of M.E. (Communication Systems) under the Regulations 2013 with Choice Based Credit System (CBCS) be continued.

- 18.6** Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.




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RESOLVED that the syllabi of B.E (ECE) programme under the Regulations 2018 & 2015 and M.E. (Communication Systems) under the Regulations 2018 & 2013 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

- 18.7** Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.E (ECE) under the Regulations 2018 & 2015 and M.E. (Communication Systems) under the Regulations 2018 & 2013

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.E (ECE) under the Regulations 2018 & 2015 and M.E. (Communication Systems) under the Regulations 2018 & 2013 to be approved.

- 18.8** Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.E (Electronics and Communication Engineering) and M.E. (Communication Systems).

RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on "Advanced Antenna Design & Simulation" be approved for the upcoming semester (2018-19 – Even semester).

- 18.9** Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – II).

Date: 21.08.2018



Chairman

HEAD

Department of ECE

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Appendix - I

Regulations - 2015

| 615ECT10 | DIGITAL IMAGE PROCESSING | L | T | P | C | Total Marks |
|--|--------------------------|---|---|---|---|-------------|
| | | 3 | 0 | 0 | 3 | 100 |
| Prerequisites: None | | | | | | |
| <p>COURSE OBJECTIVES The student should be made to:</p> <ul style="list-style-type: none"> ➤ Learn digital image fundamentals. ➤ Be exposed to simple image processing techniques. ➤ Be familiar with image compression and segmentation techniques. ➤ Learn to represent image in form of features. | | | | | | |
| <p style="text-align: center;">DIGITAL IMAGE</p> <p>UNIT I FUNDAMENTALS Introduction – Origin – Steps in Digital Image Processing – Components – Elements of Visual Perception – Image Sensing and Acquisition – Image Sampling and Quantization – Relationships between pixels - color models.</p> <p>UNIT II IMAGE ENHANCEMENT Spatial Domain: Gray level transformations – Histogram processing – Basics of Spatial Filtering– Smoothing and Sharpening Spatial Filtering – Frequency Domain: Introduction to Fourier Transform – Smoothing and Sharpening frequency domain filters – Ideal, Butterworth and Gaussian filters.</p> <p>UNIT III IMAGE RESTORATION AND SEGMENTATION Noise models – Mean Filters – Order Statistics – Adaptive filters – Band reject Filters – Band pass Filters – Notch Filters – Optimum Notch Filtering – Inverse Filtering – Wiener filtering Segmentation: Detection of Discontinuities–Edge Linking and Boundary detection – Region based segmentation- Morphological processing- erosion and dilation.</p> <p>UNIT IV WAVELETS AND IMAGE COMPRESSION Wavelets – Subband coding - Multiresolution expansions - Compression: Fundamentals – Image Compression models – Error Free Compression – Variable Length Coding – Bit-Plane Coding – Lossless Predictive Coding – Lossy Compression – Lossy Predictive Coding – Compression Standards.</p> <p>UNIT V IMAGE REPRESENTATION AND RECOGNITION Boundary representation – Chain Code – Polygonal approximation, signature, boundary segments – Boundary description – Shape number – Fourier Descriptor, moments- Regional Descriptors – Topological feature, Texture - Patterns and Pattern classes - Recognition based on matching.</p> | | | | | | |
| <p>COURSE OUTCOMES: Upon successful completion of this course, students will be able to:</p> <ul style="list-style-type: none"> CO1: Discuss digital image fundamentals. CO2: Apply image enhancement and restoration techniques. CO3: Use image compression and segmentation Techniques. | | | | | | |



[Signature]
Registrar

Appendix – II

| Programme | Stakeholder | Feedback | Recommendation | Action taken |
|-----------|-------------|--|---|---|
| ECE | Student | Students suggested the need for job oriented courses, training for facing interviews during campus selection. They also requested to provide career guidance and expert talks by industrialists. | To offer multilingual program for advancing computer education. | Carrier guidance programs were given and counselling cell supported the development of soft skills and communication ability. |
| | Teacher | Teaching methods and teaching aids must be improved | Suggested for advance learning | ICT methods and smart boards were Used for effective teaching. Computer centre promoted (FOSS) Free OpenSource Software to all services will provided in the campus to run web, mail, LDAP and MODLE |
| | Alumni | More emphasis should be on the applications of the opted field of study. Focus more on inter- disciplinary activities of many courses. | Suggested for Inter-disciplinary projects. | Inter departmental research initiatives was encouraged. |



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AVADI, CHENNAI - 600 054.

MINUTES OF THE 18th MEETING OF THE BOARD OF STUDIES IN
MECHANICAL ENGINEERING

Held on 20.8.2018

Members Present

- | | | |
|----|----------------------|------------------------|
| 1. | Dr. D. Chandramohan | Chairperson |
| 2. | Dr. P. Periyasamy | Member |
| 3. | Dr. K. Gurusami | Member |
| 4. | Mr. R. Praveen Kumar | Member |
| 5. | Mr. S. Dinesh Kumar | Member |
| 6. | Dr. K. Purushothaman | Academic Expert Member |
| 7. | Dr. S. Ranganathan | Academic Expert Member |
| 8. | Dr. K. Sekar | Industry Expert Member |

18.1 Considered the minutes of the 17th meeting of Board of Studies in Mechanical Engineering held on 19/3/2018

RESOLVED that the minutes of the 17th meeting of Board of Studies in Mechanical Engineering held on 19/3/2018 be confirmed.

18.2 Reviewed the Regulation and Syllabi of B.E (Mechanical Engineering Engineering) programmes under the Regulations 2018 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.E (Mechanical Engineering) programmes under the Regulations 2018 with Choice Based Credit System (CBCS) to be continued.



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- 18.3** Reviewed the Regulation and Syllabi of B.E (Mechanical Engineering Engineering) programmes under the Regulations 2013 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.E (Mechanical Engineering) programmes under the Regulations 2013 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the new elective course "813MET16 - Marine Propellers and Propulsion". (Appendix - I).

- 18.4** Reviewed the Regulation and Syllabi of M.E. (Advanced Manufacturing Technology) under the Regulations 2018 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of M.E. (Advanced Manufacturing Technology) under the Regulations 2018 with Choice Based Credit System (CBCS) be continued

- 18.5** Reviewed the Regulation and Syllabi of M.E. (Advanced Manufacturing Technology) under the Regulations 2013 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of M.E. (Advanced Manufacturing Technology) under the Regulations 2013 with Choice Based Credit System (CBCS) be continued.

- 18.6** Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.E (Mechanical Engineering) programme under the Regulations 2018 & 2013 and M.E. (Advanced Manufacturing Technology) under the Regulations 2018 & 2013 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

- 18.7** Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.E (Mechanical Engineering) under the Regulations 2018 & 2013 and M.E. (Advanced Manufacturing Technology) under the Regulations 2018 & 2013

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.E (Mechanical Engineering) under the Regulations 2018 & 2013 and M.E. (Advanced Manufacturing Technology) under the Regulations 2018 & 2013 to be approved.



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18.8 Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.E (Mechanical Engineering) and M.E. (Advanced Manufacturing Technology).

RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on "Advances in Welding Technology" be approved for the upcoming semester (2018-19 Even semester).

Date: 20.8.2018


Chairman



Registrar

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Appendix – I
B.E. Mechanical Engineering
Regulations 2018
Choice Based Credit System

813MET16 - MARINE PROPELLERS AND PROPULSION

OBJECTIVES

The course should enable the students to:

- Know Various types of Propulsion systems, Propeller geometry , Propeller theory , propeller operating environment
- Understand the Interaction between hull and the propeller
- Do Performance and maintenance of propellers

UNIT 1: PROPULSION SYSTEMS AND PROPELLER GEOMETRY

Fixed pitch propellers, Ducted propellers, Podded and azimuthing propulsors, Contrarotating propellers, Overlapping propellers, Tandem propellers, Controllable pitch propellers, Waterjet propulsion, Cycloidal propellers paddle wheels, Magneto hydrodynamic propulsion, Superconducting motors for marine propulsion.

Frames of references, Propeller reference lines, Pitch, Rake and skew, Propeller outlines and area, Propeller drawing methods Section geometry and definition, Blade thickness distribution and thickness fraction, Blade interference limits for controllable pitch propellers, Controllable pitch propeller offdesign section geometry, Miscellaneous conventional propeller geometry terminology.

UNIT 2: PROPELLER ENVIRONMENT & PROPELLER THEORY

Density of water, Salinity, Water temperature, Viscosity, Vapour pressure, Dissolved gases in sea water, Surface tension, Weather, Silt and marine organisms. Momentum theory - Ranking, R.E. Froude , Blade element theory - W. Froude , Propeller Theoretical development, Burrill's analysis procedure, Lerbs analysis method, Eckhardt and Morgan's design method, Lifting surface correction factors - Morgan, Lifting surface models, Lifting-line - lifting-surface hybrid models, Vortex lattice methods, Boundary element methods, Methods for specialist propulsors, Computational fluid dynamics methods.

UNIT 3: CAVITATION & NOISE

The basic physics of cavitation, Types of cavitation experienced by propellers, Cavitation considerations in design, Cavitation inception, Cavitation-induced damage, Cavitation testing of propellers, Analysis of measured pressure data from a cavitating propeller, Propeller - rudder interaction. Physics of underwater sound, Nature of propeller noise, Noise scaling relationships, Noise prediction and control, Transverse propulsion unit noise, Measurement of radiated noise.

UNIT 4: PROPELLER-SHIP INTERACTION, SHIP RESISTANCE AND PROPULSION

Bearing forces, Hydrodynamic interaction, Froude's analysis procedure, Components of calm water resistance, Methods of resistance evaluation, Propulsive coefficients, The influence of rough water, Restricted water effects, High-speed hull form resistance, Air resistance.



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UNIT 5: SERVICE PERFORMANCE, TOLERANCE AND MAINTENANCE

Effects of weather, Hull roughness and fouling, Hull drag reduction, Propeller roughness and fouling, Generalized equations for the roughness-induced power penalties in ship operation, Monitoring of ship performance. Propeller tolerances, Propeller inspection, Causes of propeller damage, Propeller repair, Welding and the extent of weld repairs, stress relief

COURSE OUTCOMES

Upon the completion of this course the students will be able to:

- Know the effect of environment on the performance.
- Understand the Propeller theory, Cavitation and the analytical tools used in the Industry.
- Appreciate the Hull - Propeller Interaction and its effect on the performance of Propeller.

TEXT BOOK

1. John Carlton, Marine Propellers and Propulsion, (2nd Edition) published by Elsevier limited, 2007




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AVADI, CHENNAI - 600 054.

MINUTES OF THE 4th MEETING OF THE BOARD OF STUDIES IN

BIOCHEMISTRY

Held on 17.09.2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|---------------------|--|-----------------|---|
| 1. | Dr.N Radhakrishnan | Professor & Head | Chairman |  |
| 2. | Ms.BV.Febiyola | Assistant Professor | Member |  |
| 3. | Dr. A. Suresh Kumar | Scientist, Biochemistry & Biotech Division CSIR-CLRI, Chennai | External Member |  |
| 4. | Dr. BaluRanganathan | Technology - Director, Palms connect, Solution Pvt. Ltd, Chennai | External Member |  |




Registrar

St. Peter's Institute of Higher Education and Research
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Avadi, Chennai - 600 054


Chairman

Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

- 4.1 Considered the minutes of the 2nd meeting of Board of Studies in BIOCHEMISTRY held on 12.02.2018.

RESOLVED that the minutes of the 3rd meeting of Board of Studies in BIOCHEMISTRY held on 12.02.2018 be confirmed

- 4.2 Reviewed the Regulation & Syllabi of B.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.Sc. (BIOCHEMISTRY) programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the new elective course "316UBYT04- Fermentation Technology".
(Appendix - I).

- 4.3 Reviewed the Regulation & Syllabi of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation & Syllabi of M.Sc. BIOCHEMISTRY programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

- 4.4 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

- 4.5 Considered to include courses having focus on employability/ entrepreneurship/skill development in the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc. (BIOCHEMISTRY) programme under the Regulations 2016 and M.Sc. (BIOCHEMISTRY) under the Regulations 2016 to be approved.




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4.6

Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – II).

Date: 17.09.2018


Chairman

**Head of the Department
Biochemistry
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.**




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**DEPARTMENT OF BIOCHEMISTRY
B.Sc BIOCHEMISTRY**

Appendix – I

316UBYT04 – FERMENTATION TECHNOLOGY

UNIT-I

Scope and importance of biotechnology. Recombinant DNA technology- Definition, restriction endonucleases- types, role, recognition sequences, cleavage pattern, modification of cuts ends, vectors- plasmid, cosmid, phage. Enzymes used in rDNA technology- DNA ligases, Alkaline phosphatase, polynucleotide kinase, linkers, homopolymer tailing, end labeling and construction maps of PBR322, λ bacteriophage.

UNIT-II

Steps in genetic engineering- Construction of genomic library. Synthesis of cDNA Construction of cDNA library. Gene transfer methods- transformation, conjugation, transduction, microinjection and electroporation. Selection-selectable markers, chromogenic substrate and screening of clones- colony hybridization, screening with antibodies.

UNIT-III

Plant tissue culture- basic requirements for culture, M S medium, callus culture, protoplast culture. Vectors – Ti plasmid (cointegration vector and binary vector), Viral vectors- TMV, CaMV and their applications. Transgenic plants – pest resistant, herbicide resistant and stress tolerant plants.

UNIT-IV

Vectors for gene transfer in animal cells - SV 40 Vector. Basics of transfection methods- calcium phosphate precipitation, DEAE- dextran mediated transfection. Transgenic micretroviral transfer and stem cell mediated transfer, applications. Embryonic stem cell- definition, ES cell culture to produce differentiated cells, applications. PCR - application in clinical diagnosis and forensic science. Southern blotting, Northern blotting and ELISA – principle, method and applications.


UNIT-V

Production and applications of ethanol and streptomycin (industrial Biotechnology), Proteases (Enzyme biotechnology), Biogas, Biodiesel (Fuel biotechnology), Waste water treatment (Environmental Biotechnology), Vaccines and monoclonal antibodies (Medical biotechnology).

Books Recommended:

1. David Freifelder (1992) Essentials of Molecular Biology (2nd ed) Jones & Bartlett Pub
2. Click B.R. and Pasternak J.J (2010). Molecular Biotechnology: Principles and Applications of Recombinant DNA. (4th ed) American Society for Microbiology
3. James D. Watson , Amy A. Caudy , Richard M. Myers , Jan Witkowski (2006) , Recombinant DNA: Genes and Genomes - a Short Course (3rd ed), W.H. Freeman & Co
4. Satyanarayana U (2008), Biotechnology, Books & Allied (P) Ltd.
5. Casida L (2007) Industrial Microbiology , New Age International
6. Reed G (2004) Prescott and Dunn's Industrial Microbiology, CBS Publishers & Distributors




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Appendix – II

| Program | Stakeholder | Feedback | Recommendation | Action taken |
|--------------|-------------|---|---|---|
| BIOCHEMISTRY | Students | It seems that students still requires more competent skills to face the industrial evaluation | Teaching and educational activities to be incorporated in future. | Students were asked to present PPT on the assured topics & activities like Role play were included |
| | Teachers | Evaluation practices require more improvement to streamline the curriculum taught. | Evaluation practices needs to be conducted more in future. | Continuous assessment tests & Model Exams were conducted to enhance the follow-up of concepts taught. |
| | Alumni | Upgrading on use of ICT methods were favoured. | Facultie were insisted to use more ICT enabled teaching methods. | Faculties were requested to opt for ICT teaching methods like PPTs presentation , online quiz. |



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MINUTES OF THE 5th MEETING OF THE BOARD OF STUDIES IN

BIOTECHNOLOGY

Held on 17.09.2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|----------------------------|--|-----------------|---|
| 1. | Dr. P. Vasantha Srinivasan | Professor & Head | Chairman |  |
| 2. | Dr. K. Amala | Assistant Professor | Member |  |
| 3. | Dr. A. Suresh Kumar | Scientist, Biochemistry & Biotech Division CSIR-CLRI, Chennai | External Member |  |
| 4. | Dr. Balu Ranganathan | Technology - Director, Palms connect, Solution Pvt. Ltd, Chennai | External Member |  |




Registrar

St. Peter's Institute of Higher Education and Research
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Chairman

Head of the Department
Biotechnology

St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.

- 5.1 Considered the minutes of the 4th meeting of Board of Studies in Biotechnology held on 12.02.2018.

RESOLVED that the minutes of the 4th meeting of Board of Studies in Biotechnology held on 12.02.2018 be confirmed

- 5.2 Reviewed the Regulation & Syllabi of B.Sc. Biotechnology programme under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of B.Sc. (Biotechnology) programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the new elective course "316UBTT05- Public Health Management". (Appendix - I).

- 5.3 Reviewed the Regulation & Syllabi of M.Sc. Biotechnology programme under the Regulations 2016 with Choice Based Credit System (CBCS).

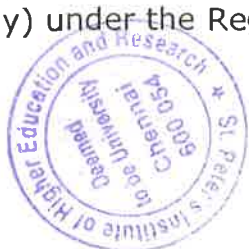
RESOLVED that the Regulation & Syllabi of M.Sc. Biotechnology programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

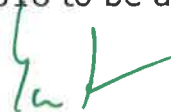
- 5.4 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.Sc. (Biotechnology) programme under the Regulations 2016 and M.Sc. (Biotechnology) under the Regulations 2016 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

- 5.5 Considered to include courses having focus on employability/ entrepreneurship/skill development in the syllabi of B.Sc. (Biotechnology) programme under the Regulations 2016 and M.Sc. (Biotechnology) under the Regulations 2016

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc. (Biotechnology) programme under the Regulations 2016 and M.Sc. (Biotechnology) under the Regulations 2016 to be approved.




Registrar

5.6 Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – II).

Date: 17.09.2018



Chairman

Head of the Department
Biotechnology
St. Peter's Institute of Higher Education & Research
Avadi, Chennai - 600 054.



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Appendix – I

Elective-I (316UBTT05) - III Semester

PUBLIC HEALTH MANAGEMENT

Course objectives:

1. To train students in the goal of public health is to prevent disease, promote health, and prolong life among the population as a whole.
2. To impart Knowledge of the change in health status that is the desired result of the educational intervention..

UNIT - I Health – Basic concepts and Definition; Need for good health; factors affecting health, Basic sanitation and personal hygiene – Food (Balanced diet) food habits and cleanliness, food adulterants, avoiding smoking, drugs and alcohol.

UNIT - II Public Health: Communicable diseases, Mode of disease transmission (Epidemic and endemic diseases), Vaccination, Management of Hygiene in public places (Railway stations, Bus stands and other public places) hospitals – Nosocomial / Hospital acquired infections and hygiene in Educational institutions.

UNIT - III Occupational Health and Safety: Occupational health and hazards – physical, chemical and biological hazards. Occupational diseases – Prevention and control. Health protection measures for workers – health education – first aid. Management of medical emergencies.

UNIT - IV Disease: Introduction - principles of disease control - Infection- portal of entry; Disease- types of diseases (Deficiency, infection, pollution diseases). Microbial flora of human. Host - Parasite relationship. Management of communicable and non-communicable diseases.

UNIT - V Health and Disease: Basic concepts and Definition, Disease control and Levels of prevention, Determinants and indicators of health, Health situation and trends in India. International bodies in health protection and promotion. Role of quarantine rules, laws and enforcement in the preventive measures of pandemic diseases.

REFERENCE BOOKS

1. Ananantanarayan, R. and Paniker, C.J.K “Textbook of Microbiology” 8th edition. Universities Press, Orient Blackswan, 2005.
2. Park K, “Textbook of Preventive & Social Medicine” 22nd edition, Banarsidas Bhanot publishers, 2013.
3. Roger Detels, Robert Beaglehole, Mary Ann Lansang, Martin Gulliford., “Oxford Textbook of Public Health”, 5th edition. Oxford press, 2011

COURSE OUTCOME

1. Create awareness on disease
2. Understand the principles of disease management.
3. Provide knowledge about stem cells.




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Appendix – II

| Program | Stakeholder | Feedback | Recommendation | Action taken |
|---------------|-------------|---|---|---|
| Biotechnology | Students | It seems that students still requires more competent skills to face the industrial evaluation | Teaching and educational activities to be incorporated in future. | Students were asked to present PPT on the assured topics & activities like Role play were included |
| | Teachers | Evaluation practices require more improvement to streamline the curriculum taught. | Evaluation practices needs to be conducted more in future. | Continuous assessment tests & Model Exams were conducted to enhance the follow-up of concepts taught. |
| | Alumni | Upgrading on use of ICT methods were favoured. | Facultie were insisted to use more ICT enabled teaching methods. | Faculties were requested to opt for ICT teaching methods like PPTs presentation, online quiz. |




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**MINUTES OF THE 6th MEETING OF THE BOARD OF STUDIES IN
CHEMISTRY**


Held on 27th August 2018

Members Present

- | | |
|---|-----------------|
| (1) Dr. Sayeeda Sultana, Professor & Head | Chairperson |
| (2) Dr. S. Ramabadrn, Professor | Internal Member |
| (3) Dr.S.Dhandayuthapani. Associate Professor | Internal Member |
| (4) Ms.G.Kalpana, Assistant Professor | Internal Member |
| (5) Dr.N.Indra Gandhi, Associate Professor Department of Chemistry, Presidency College, Chennai | External Member |
| (6) Dr.Anitha, Associate Professor Department of Chemistry, Queen Mary's College, Chennai | External Member |

| | |
|-----|---|
| 6.1 | Considered the minutes of the 5 th meeting of Board of Studies in Chemistry held on 16.03.2018. RESOLVED that the minutes of the 5 th meeting of Board of Studies in Chemistry held on 16.03.2018 be confirmed. |
| 6.2 | Reviewed Syllabi of Engineering Chemistry prescribed for Engineering and Technology programmes under the Regulations 2013, 2015 and 2017. RESOLVED that the Syllabi of Engineering Chemistry prescribed for Engineering and Technology programmes under the Regulations 2013 2015 and 2017 be continued |
| 6.3 | Reviewed Syllabi of Engineering Chemistry prescribed for Engineering and Technology programmes under the Regulations 2018. RESOLVED that the Syllabi of Engineering Chemistry prescribed for Engineering and Technology programmes under the Regulations 2018 be continued |
| 6.4 | Reviewed the Regulation & Syllabi of B.Sc Chemistry programme under the Regulations 2016. RESOLVED that the Regulation & Syllabi of B.Sc Chemistry programme under the Regulations 2016 be continued. |
| 6.5 | Reviewed the Regulation & Syllabi of I & II Semester of B.Sc Chemistry programme under the Regulations 2018. RESOLVED that the Regulation & Syllabi of I & II Semester of B.Sc Chemistry programme under the Regulations 2018 be continued. |




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| | |
|-----|---|
| 6.6 | Reviewed the Regulation & Syllabi of M.Sc Chemistry programme under the Regulations 2016. RESOLVED that the Regulation & Syllabi of III & IV Semester of M.Sc Chemistry programme under the Regulations 2016 be continued. |
| 6.7 | Reviewed the Regulation & Syllabi of M.Phil Chemistry programme under the Regulations 2016. RESOLVED that the Regulation & Syllabi of M.Phil Chemistry programme under the Regulations 2016 be continued. |
| 6.8 | Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of M.Sc (Chemistry). RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on “Plastic Waste Management” be approved for the upcoming semester (2018-19–EVEN semester). |
| 6.9 | Reviewed and considered the curriculum feedback analysis and action taken report collected from stake holders. NOTED the curriculum feedback analysis and action taken report collected from stake holders be included in the appropriate place in the syllabi. (Appendix - I) |



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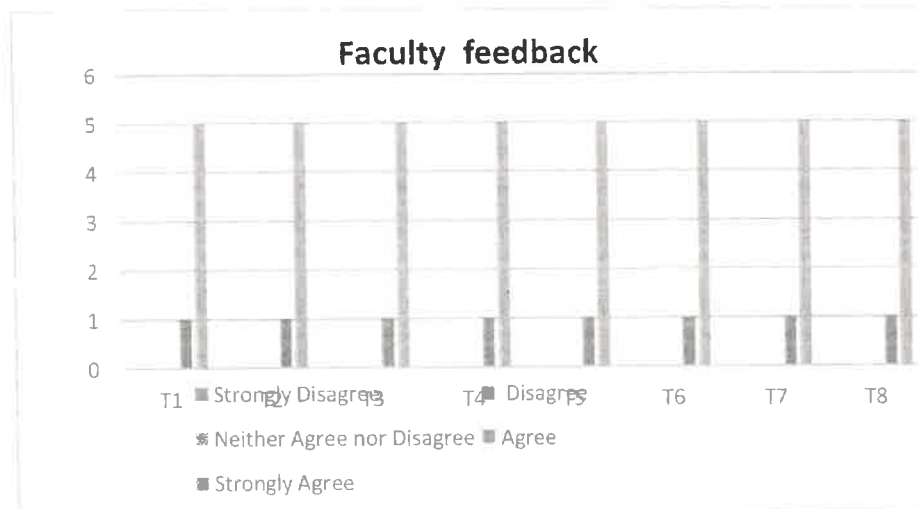
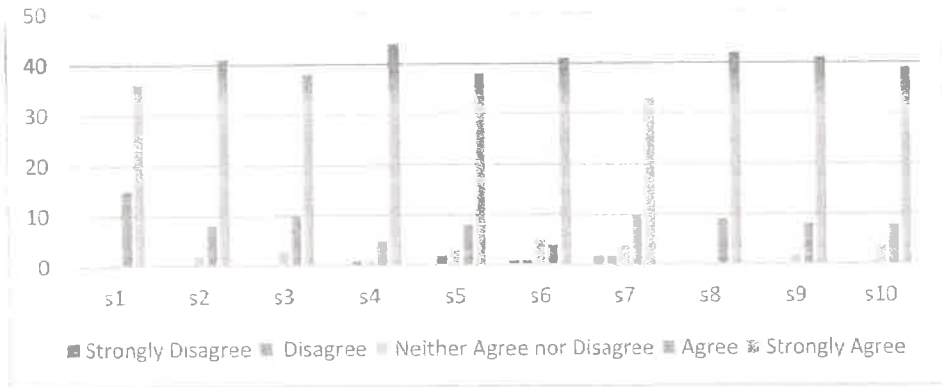
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Date: 27.08.2018

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Chairperson
27/8/2018
DR. SAYEEDA SULTANA
PROFESSOR AND HOD
DEPARTMENT OF CHEMISTRY
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FEEDBACK ANALYSIS (2017-18)

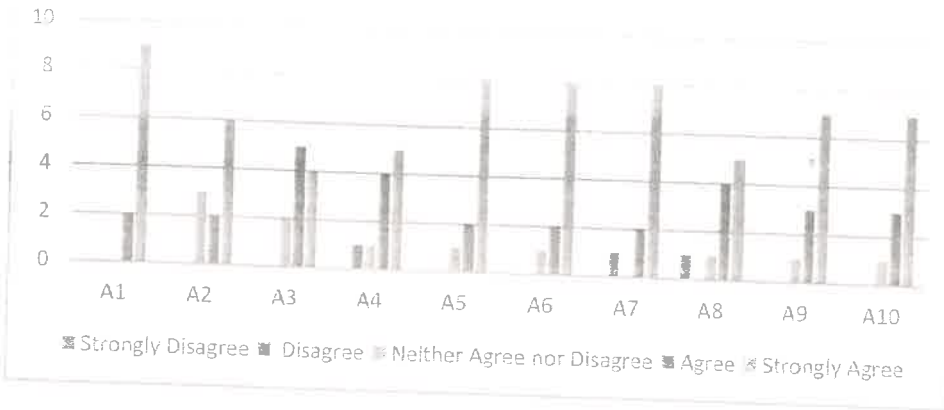
Student Feedback



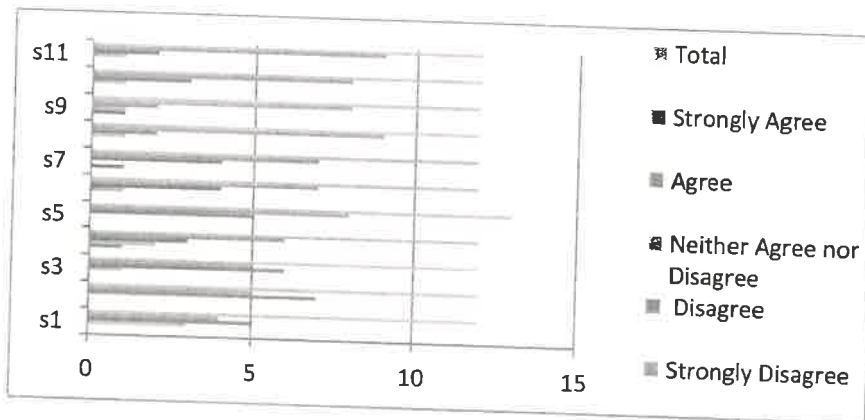
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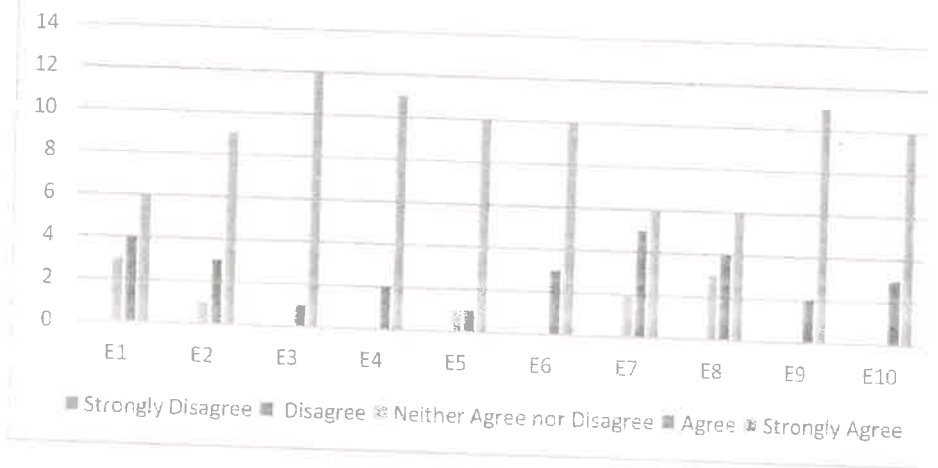
Alumni Feedback



Parent Feedback



EMPLOYER FEEDBACK



Date: 27.08.2018



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Sayeeda sultana
Chairperson
DR. SAYEEDA SULTANA
PROFESSOR AND HEAD
DEPARTMENT OF CHEMISTRY
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MINUTES OF THE 18th MEETING OF THE BOARD OF STUDIES IN DEPARTMENT OF MANAGEMENT STUDIES

Held on 21.08.2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|-------------------|--|-----------------|---|
| 1. | Dr.R.Gayathri | Professor & Head | Chairman |  |
| 2. | Mrs.A.R.Aruna | Assistant Professor | Internal Member |  |
| 3. | Dr.M.J.Arputharaj | SR DGM, HR, Madras Engineering Industries Pvt. Ltd. | External Member |  |
| 4. | Dr.P.Umarani | Professor, Department of Management Studies, Saveetha Engineering College, Thandalam | External Member |  |
| 5. | Dr.L.Vijay | Controller of Examination, S.A. Engineering College, Veeraraghavapuram, (Alumni) | External Member |  |




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Chairman

HEAD OF DEPARTMENT
School of Commerce &
Management Studies
SPIHER, Chennai

- 18.1 Considered the minutes of the 17th meeting of Board of Studies in Department of Management Studies held on 14.02.2018.

RESOLVED that the minutes of the 17th meeting of Board of Studies in Department of Management Studies held on 14.02.2018 be confirmed

- 18.2 Reviewed the Regulation and Syllabi of Department of Management Studies MBA programmes under the Regulations 2017 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of MBA programmes for Department of Management under the Regulations 2017 with Choice Based Credit System (CBCS) to be continued.

- 18.3 Reviewed the Regulation and Syllabi of BBA Department of Management Studies under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of BBA Department of Management Studies programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

- 18.4 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of MBA Department of Management Studies programme under the Regulations 2017 and BBA under the Regulations 2016 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.

- 18.5 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of MBA under the Regulations 2017 and BBA under the Regulations 2016.

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of MBA under the Regulations 2017 and BBA under the Regulations 2016 to be approved.




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18.6 Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix - I)



Date: 21.08.2018

Chairman

**HEAD OF DEPARTMENT
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Appendix – I

| Programme | Stakeholder | Feedback | Recommendation | Action taken |
|----------------------|-------------|---|---|---|
| MBA & BBA | Student | Students suggested the need for job oriented courses in such as way students been trained to face interviews during campus selection in financial or banking sector, also for finance department post also in GST Filing. Also Rural Supply Chain Management course given platform for students to start own business and creates innovative thinking for exposusre and start their own business and skill developed based on training given by experts. | To offer multilingual program which given creativity and some connectivity towards the interview performance both in subject and practical. | Carrier guidance programs were given and counselling cell supported the development of job opportunities, self employment and also skill development ability and capacity increases in such as way to meet corporate need and want. |
| | Teacher | Teaching methods and teaching aids must be improved and learning management system has to be properly introduced | Suggested for advance learning and introduce new aid for betterment understanding of students teacher interactions | Learning Management Systems about to introduced by our management side for better clarity and benefits out of our methods which we adopt |
| | Alumni | More emphasis should be on the applications of the opted field of study. Focus more on inter-disciplinary activities of many courses which creates skill, entrepreneurship as well employment to meet the future technology and to settle in life. | Suggested for Inter-disciplinary projects which creates job opportunity. | Inter departmental research initiatives was encouraged both stuentns as well faculty to go for next level in LMS. |




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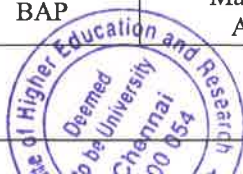
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E-mail:registrar@spiher.ac.in
Website:www.spiher.ac.in

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NEW COURSES FOR THE ACADEMIC YEAR 2018-2019

MASTER OF BUSINESS ADMINISTRATION

| S.No | Programme Code | Programme Name | Course Code | Name of the Course |
|------|----------------|-----------------------------------|-------------|--|
| 1 | BAP | Master of Business Administration | 317MBT01 | INTERNATIONAL BUSINESS MANAGEMENT |
| 2 | BAP | Master of Business Administration | 317MBT02 | STRATEGIC MANAGEMENT |
| 3 | BAP | Master of Business Administration | 317MBT03 | BRAND MANAGEMENT |
| 4 | BAP | Master of Business Administration | 317MBT05 | CUSTOMER RELATIONSHIP MANAGEMENT |
| 5 | BAP | Master of Business Administration | 317MBT08 | SERVICES MARKETING |
| 6 | BAP | Master of Business Administration | 317MBT12 | DERIVATIVES MANAGEMENT |
| 7 | BAP | Master of Business Administration | 317MBT13 | MERCHANT BANKING AND FINANCIAL SERVICES |
| 8 | BAP | Master of Business Administration | 317MBT14 | SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT |
| 9 | BAP | Master of Business Administration | 317MBT16 | ENTREPRENEURSHIP DEVELOPMENT |
| 10 | BAP | Master of Business Administration | 317MBT17 | INDUSTRIAL RELATIONS AND LABOUR WELFARE |
| 11 | BAP | Master of Business Administration | 317MBT21 | STRATEGIC HUMAN RESOURCE MANAGEMENT |
| 12 | BAP | Master of Business Administration | 317MBT30 | PROJECT MANAGEMENT |
| 13 | BAP | Master of Business Administration | 317MBT31 | SERVICES OPERATIONS MANAGEMENT |
| 14 | BAP | Master of Business Administration | 317MBT32 | SUPPLY CHAIN MANAGEMENT |
| 15 | BAP | Master of Business Administration | 317MBT36 | EPIDEMIOLOGY & PUBLIC HEALTH SYSTEMS |
| 16 | BAP | Master of Business Administration | 317MBT37 | HOSPITAL WASTE MANAGEMENT |
| 17 | BAP | Master of Business Administration | 317MBT41 | FUNDAMENTALS OF SHIPPING |
| 18 | BAP | Master of Business Administration | 317MBT42 | PORT AND TERMINAL MANAGEMENT |
| 19 | BAP | Master of Business Administration | 317MBP01 | SUMMER TRAINING |
| 20 | BAP | Master of Business Administration | 417MBP01 | PROJECT WORK |



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| | | | | |
|----|-----|-----------------------------------|-----------|---|
| 21 | BAP | Master of Business Administration | 317MBT10 | BANKING FINANCIAL SERVICES MANAGEMENT |
| 22 | BAP | Master of Business Administration | 317MBT11 | CORPORATE FINANCE |
| 23 | BAP | Master of Business Administration | 317MBT12J | DERIVATIVES MANAGEMENT |
| 24 | BAP | Master of Business Administration | 317MBT13J | MERCHANT BANKING AND FINANCIAL SERVICES |

R.

HEAD OF DEPARTMENT
 School of Commerce
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AMBT2918- STRATEGIC MANAGEMENT

| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|----------------------|---|---|---|-----------|---|
| AMBT2918 | STRATEGIC MANAGEMENT | 4 | 0 | 0 | 4 | 4 |

OBJECTIVE:

- To equip students with the to develop and sharpen your skills for formulating, deploying and assessing an organization's strategy for achieving competitive advantage in the marketplace.
- To learn the major initiatives taken by a company's top management on behalf of corporates, involving resources and performance in external environments
- to understand the analysis and implementation of strategic management in strategic business units

UNIT I STRATEGY AND PROCESS

Conceptual framework for strategic management, the Concept of Strategy and the Strategy Formation Process – Stakeholders in business – Vision, Mission and Purpose – Business definition, Objectives and Goals - Corporate Governance and Social responsibility-case study.
(12 Hours)

UNIT II COMPETITIVE ADVANTAGE

External Environment - Porter's Five Forces Model-Strategic Groups Competitive Changes during Industry Evolution-Globalisation and Industry Structure - National Context and Competitive advantage Resources- Capabilities and competencies–core competencies-Low cost and differentiation Generic Building Blocks of Competitive Advantage- Distinctive Competencies-Resources and Capabilities durability of competitive Advantage- Avoiding failures and sustaining competitive advantage-Case study.
(12 Hours)

UNIT III STRATEGIES

The generic strategic alternatives – Stability, Expansion, Retrenchment and Combination strategies - Business level strategy- Strategy in the Global Environment-Corporate Strategy- Vertical Integration-Diversification and Strategic Alliances- Building and Restructuring the corporation- Strategic analysis and choice - Environmental Threat and Opportunity Profile (ETOP) - Organizational Capability Profile - Strategic Advantage Profile - Corporate Portfolio Analysis - SWOT Analysis - GAP Analysis - Mc Kinsey's 7s Framework - GE 9 Cell Model - Distinctive competitiveness - Selection of matrix - Balance Score Card-case study.
(12 Hours)




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The implementation process, Resource allocation, Designing organisational structure-Designing Strategic Control Systems- Matching structure and control to strategy-Implementing Strategic change-Politics-Power and Conflict-Techniques of strategic evaluation & control-case study.
(12 Hours)

UNIT V OTHER STRATEGIC ISSUES

Managing Technology and Innovation-Strategic issues for Non Profit organisations. New Business Models and strategies for Internet Economy-case study **(12 Hours)**

COURSE OUTCOME :

CO1 Employ strategic concepts to analyze a chosen industry.

CO2 Analyze the strategic effectiveness of an organization.

CO3 Evaluate the implications of strategic decisions made by one business discipline on others and on the business as a whole.


CO4 Present a multi-year strategic plan to a group of interested stakeholder

CO 5 Design organizational structure and Design Strategic Control Systems

REFERENCES :

1. Hill. Strategic Management : An Integrated approach, 2009 Edition Wiley (2012).
2. John A.Parnell. Strategic Management, Theory and practice Biztantra (2012).
3. Azhar Kazmi, Strategic Management and Business Policy, 3rd Edition, Tata McGraw Hill,2008
4. Adriaui HAbenberg and Alison Rieple, Strategic Management Theory & Application, Oxford University Press, 2008.
5. Gupta, Gollakota and Srinivasan, Business Policy and Strategic Management – Concepts and Application, Prentice Hall of India, 2005.
6. Dr.Dharma Bir Singh, Strategic Management & Business Policy, KoGent Learning Solutions Inc., Wiley, 2012.
7. John Pearce, Richard Robinson and Amitha Mittal, Strategic Management, McGraw Hill, 12th Edition, 2012.




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| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|------------------|---|---|---|-----------|---|
| AMBT2919 | BRAND MANAGEMENT | 3 | 0 | 0 | 3 | 3 |

OBJECTIVES :

- To understand the basic Principles of branding.
- To understand the key issues in crafting and evaluating brand strategies
- To improve the skills in delivering persuasive brand presentations.
- To evaluate brand extension and its contribution to parent brand
- To develop an understanding of brand equity and a range of performance related outcomes.

UNIT I INTRODUCTION

Basics Understanding of Brands – Definitions - Branding Concepts – Functions of Brand - Significance of Brands – Different Types of Brands – Co branding – Store brands. **(9 Hours)**

UNIT II BRAND STRATEGIES

Strategic Brand Management process – Building a strong brand – Brand positioning – Establishing Brand values – Brand vision – Brand Elements – Branding for Global Markets – Competing with foreign brands. **(9 Hours)**

UNIT III BRAND COMMUNICATIONS

Brand image Building – Brand Loyalty programmes – Brand Promotion Methods – Role of Brand ambassadors, celebrities – On line Brand Promotions **(9 Hours)**

UNIT IV BRAND EXTENSION

Brand Adoption Practices – Different type of brand extension – Factors influencing Decision for extension – Re-branding and re-launching. **(9 Hours)**

UNIT V BRAND PERFORMANCE

Measuring Brand Performance – Brand Equity Management - Global Branding strategies - Brand Audit – Brand Equity Measurement – Brand Leverage -Role of Brand Managers– Branding challenges & opportunities. **(9 Hours)**



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COURSE OUTCOMES :

- CO1** Have a solid understanding of the key 'branding' concepts, methods and tools used by marketing practitioners.
- CO2** Be able to more confidently engage in and contribute to 'brand building' projects, developments, and discussions.
- CO3** Elaborate Brand Performance, brand value chain, brand tracking studies
- CO4** Designing brand strategy, New products and Brand extensions
- CO5** Discuss on brand equity on brand leverage.

REFERENCES :

1. Kevin Lane Keller, Strategic Brand Management: Building, Measuring and Managing Brand Equity, Pearson, 4th Edition, 2013.
2. Aker, David, Building Strong Brands, Simon and Schuster, 1995
3. Kapferer J.N, Strategic Brand Management, 4th edition, Kogan Press, 2008
4. Moorthi YLR, Brand Management – I edition, Vikas Publishing House 2001.




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AMBT2924- SERVICES MARKETING

| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|--------------------|---|---|---|-----------|---|
| AMBT2924 | SERVICES MARKETING | 3 | 0 | 0 | 3 | 3 |

OBJECTIVE:

- To emphasize the significance of services marketing in the global economy
- To make the students understand the deeper aspects of successful services marketing.
- To provide insights to the challenges and opportunities in services marketing.

UNIT I INTRODUCTION

Definition – Service Economy – Evolution and growth of service sector – Nature and Scope of Services – Unique characteristics of services - Challenges and issues in Services Marketing.

(9 Hours)

UNIT II SERVICE MARKETING OPPORTUNITIES

Assessing service market potential - Classification of services – Expanded marketing mix – Service marketing – Environment and trends – Service market segmentation, targeting and positioning.

(9 Hours)

UNIT III SERVICE DESIGN AND DEVELOPMENT

Service Life Cycle – New service development – Service Blue Printing – GAP model of service quality – Measuring service quality – SERVQUAL – Service Quality function development.

(9 Hours)

UNIT IV SERVICE DELIVERY AND PROMOTION

Positioning of services – Designing service delivery System, Service Channel – Pricing of services, methods – Service marketing triangle - Integrated Service marketing communication.

(9 Hours)



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UNIT V SERVICE STRATEGIES

Service Marketing Strategies for health – Hospitality – Tourism – Financial – Logistics - Educational – Entertainment & public utility Information technique Services (9 Hours)

COURSE OUTCOME:

CO1 Will be able to apply the concepts of services marketing in promoting services.

CO2 Explain Definition, Significance, Characteristics of Services

CO3 Frame Extended Marketing Mix for Services

CO4 Demonstrate Applications of Service Marketing: like Tourism, Hospitality, Airlines, etc

CO 5 Development of the delivery on service and promotion

REFERENCES :

1. Chiristopher H.Lovelock and Jochen Wirtz, Services Marketing, Pearson Education, New Delhi, 7th edition, 2011.
2. Hoffman, Marketing of Services, Cengage, 4th Edition, 2010.
3. Kenneth E Clow, et al, Services Marketing Operation Management and Strategy, Biztantra, 2nd Edition, New Delhi, 2004.
4. Valarie Zeithaml et al, Services Marketing, 5th International Edition, Tata McGraw Hill, 2007.
5. Gronroos, Service Management and Marketing –Wiley India, 3rd Edition, 2009




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AMBT2928- DERIVATIVES MANAGEMENT

| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|------------------------|---|---|---|-----------|---|
| AMBT2928 | DERIVATIVES MANAGEMENT | 3 | 0 | 0 | 3 | 3 |

OBJECTIVE :

- To understand the nuances involved in derivatives
- to understand the basic operational mechanisms in derivatives
- To understand history of derivatives in India

UNIT I INTRODUCTION

Derivatives – Definition – Types – Forward Contracts – Futures Contracts – Options – Swaps – Differences between Cash and Future Markets – Types of Traders – OTC and Exchange Traded Securities – Types of Settlement – Uses and Advantages of Derivatives – Risks in Derivatives.
(9 Hours)

UNIT II FUTURES CONTRACT

Specifications of Futures Contract - Margin Requirements – Marking to Market – Hedging uses Futures – Types of Futures Contracts – Securities, Stock Index Futures, Currencies and Commodities – Delivery Options – Relationship between Future Prices, Forward Prices and Spot Prices.
(9 Hours)

UNIT III OPTIONS

Definition – Exchange Traded Options, OTC Options – Specifications of Options – Call and Put Options – American and European Options – Intrinsic Value and Time Value of Options – Option payoff, options on Securities, Stock Indices, Currencies and Futures – Options pricing models – Differences between future and Option contracts. (9 Hours)

UNIT IV SWAPS

Definition of SWAP – Interest Rate SWAP – Currency SWAP – Role of Financial Intermediary – Warehousing – Valuation of Interest rate SWAPs and Currency SWAPs Bonds and FRNs – Credit Risk.
(9 Hours)




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UNIT V DERIVATIVES IN INDIA

Evolution of Derivatives Market in India – Regulations - Framework – Exchange Trading in Derivatives – Commodity Futures – Contract Terminology and Specifications for Stock Options and Index Options in NSE – Contract Terminology and specifications for stock futures and Index futures in NSE – Contract Terminology and Specifications for Interest Rate Derivatives.

(9 Hours)

COURSE OUTCOME :

CO1 Knowledge on Different types of products available in derivatives market

CO2 Understanding pricing mechanism of derivative products

CO3 Evolution of derivatives in India

CO 4 Discuss the role of Financial Intermediary

CO 5 Explain the Intrinsic Value and Time Value of Options

REFERENCES :

1. David Dubofsky – ‘Option and Financial Futures – Valuation and Uses, McGraw Hill International Edition.
2. Don M. Chance, Robert Brooks, An Introduction to Derivatives and Risk Management, 9th edition, Cengage, 2015.
3. John. C. Hull, Options, Futures and Other Derivative Securities’, PHI Learning, 9th Edition, 2012
4. Keith Redhead, ‘Financial Derivatives – An Introduction to Futures, Forwards, Options and SWAPs’– PHI Learning, 2011.
5. S. L. Gupta, Financial Derivatives- Theory, Concepts and Practice, Prentice Hall of India, 2011.
6. Stulz, Risk Management and Derivatives, Cengage, 2nd Edition, 2011.
7. Varma, Derivatives and Risk Management, 2nd Edition, 2011.
8. Website of NSE, BSE.




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| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|---|---|---|---|-----------|---|
| AMBT2929 | MERCHANT BANKING AND FINANCIAL SERVICES | 3 | 0 | 0 | 3 | 3 |

OBJECTIVES :

- Understand the modes of issuing securities
- Acquire financial evaluation technique of leasing and hire purchase
- Understand the different financial services like factoring, credit rating method

UNIT I MERCHANT BANKING

Introduction – An Over view of Indian Financial System – Merchant Banking in India – Recent Developments and Challenges ahead – merchant banking services offered by banks – NBFC’S offering merchant banking – Banking system – types of banks – payment banking -Legal and Regulatory Framework – Relevant Provisions of Companies Act- SERA- SEBI guidelines- FEMA, etc. - Relation with Stock Exchanges and OTCEI.

(9 Hours)

UNIT II ISSUE MANAGEMENT

Role of Merchant Banker in Appraisal of Projects, Designing Capital Structure and Instruments – Issue Pricing – Book Building – Preparation of Prospectus Selection of Bankers, Advertising Consultants, etc. - Role of Registrars –Bankers to the Issue, Underwriters, and Brokers. – Offer for Sale – Green Shoe Option – E-IPO, Private Placement – Bought out Deals – Placement with FIs, MFs, FIIs, etc. Off - Shore Issues. – Issue Marketing – Advertising Strategies – NRI Marketing – Post Issue Activities.

(9 Hours)

UNIT III OTHER FEE BASED SERVICES

Mergers and Acquisitions – Portfolio Management Services – Credit Syndication – Credit Rating

– Mutual Funds - Business Valuation.

(9 Hours)



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UNIT IV FUND BASED FINANCIAL SERVICES

Leasing and Hire Purchasing – Basics of Leasing and Hire purchasing – Financial Evaluation.
(9 Hours)

UNIT V OTHER FUND BASED FINANCIAL SERVICES

Consumer Credit – Credit Cards – Real Estate Financing – Bills Discounting – factoring and Forfeiting – Venture Capital - venture debt funds – start up financing. (9 Hours)

COURSE OUTCOME

CO1 Know about the financial market structure and participants in the markets

CO2 Know the role of merchant bankers in providing the issuing of securities

CO3 Understand the Hire purchase and Lease assistance to micro small, small, medium and large scale business units

CO4 Gain knowledge on the different financial services which are available in India

CO 5 Understand the services offered on the basis of fees and funds

REFERENCES :

1. M.Y.Khan, Financial Services, Tata McGraw-Hill, 12th Edition, 2012
2. Nalini Prava Tripathy, Financial Services, PHI Learning, 2011.
3. Machiraju, Indian Financial System, Vikas Publishing House, 2nd Edition, 2010.
4. J.C.Verma, A Manual of Merchant Banking, Bharath Publishing House, New Delhi,
5. Varshney P.N. & Mittal D.K., Indian Financial System, Sultan Chand & Sons, New Delhi.
6. Sasidharan, Financial Services and System, Tata Mcgraw Hill, New Delhi, 2nd Edition, 2011.
7. Website of SEBI
8. Madura, Financial Institutions & Markets, 10th edition, Cengage, 2016.




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FINANCIAL MANAGEMENT

AMBT3922 - BANKING FINANCIAL SERVICES MANAGEMENT

| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|---------------------------------------|---|---|---|-----------|---|
| AMBT3922 | BANKING FINANCIAL SERVICES MANAGEMENT | 3 | 0 | 0 | 3 | 3 |

OBJECTIVES:

- To get acquainted with the changed role of Banking post 1991 Reforms
- Grasp how banks raise their sources and how they deploy it and manage the associated risks .
- To know the procedural compliances by bank's functionality.
- Understand e-banking and the threats that go with it

UNIT I OVERVIEW OF INDIAN BANKING SYSTEM

Overview of Indian Banking System, Functions of banks, key Acts governing the functioning of Indian banking system – RBI Act 1934, Negotiable Instruments Act 1881, Banking Regulations Act 1948 – Rights and obligations of a banker, Overview of Financial statement of banks – Balance sheet and Income Statement. (9 Hours)

UNIT II SOURCES AND APPLICATION OF BANK FUNDS

Capital adequacy, Deposits and non-deposit sources, Designing of deposit schemes and pricing of deposit services, application of bank funds – Investments and Lending functions, Types of lending – Fund based, non-fund based, asset based – Different types of loans and their features, Major components of a typical loan policy document, Steps involved in Credit analysis, Credit delivery and administration, Pricing of loans, Customer profitability analysis. (9 Hours)

UNIT II CREDIT MONITORING AND RISK MANAGEMENT

Need for credit monitoring, Signals of borrowers" financial sickness, Financial distress prediction models – Rehabilitation process, Risk management – Interest rate, liquidity, forex, credit, market, operational and solvency risks – risk measurement process and mitigation, Basic understanding of NPAs and ALM. (9 Hours)

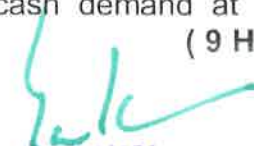
UNIT IV MERGERS, DIVERSIFICATION AND PERFORMANCE EVALUATION

Mergers and Diversification of banks into securities market, underwriting, Mutual funds and Insurance business, Risks associated therewith. Performance analysis of banks – background factors, ratio analysis and CAMELS. (9 Hours)

UNIT V HIGH TECH E-BANKING

Payment system in India – Paper based, e-payments – Electronic banking – advantages – Plastic money, E-money – Forecasting of cash demand at ATMs – Security threats in e-banking and RBI"s initiatives. (9 Hours)




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OUTCOME:

- CO1** Understand the overview of the structure of banking system in India.
CO2 Identify the various types of products and services available in Banking sector in India
CO3 Price various types of loans proposed by banks to various prospective borrowers with different risk profiles and evaluate the performance of banks
CO4 Analyze the performance of the banks
CO5 Security threats in e-banking and RBI's initiatives

REFERENCES :

1. Padmalatha Suresh and Justin Paul, "Management of Banking and Financial Services,
2. Pearson, Delhi, 2012.
3. Meera Sharma, "Management of Financial Institutions – with emphasis on Bank and Risk Management", PHI Learning Pvt. Ltd., New Delhi 2010.
4. Peter S. Rose and Sylvia C. and Hudgins, "Bank Management and Financial Services", Tata McGraw Hill, New Delhi, 2012.
5. Madura, Financial Institutions & Markets, 10th edition, Cengage, 2016.

AMBT3923 - CORPORATE FINANCE

| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|-------------------|---|---|---|-----------|---|
| AMBT3923 | CORPORATE FINANCE | 3 | 0 | 0 | 3 | 3 |

OBJECTIVES :

- Nuances involved in short term corporate financing
- learn to apply the analytical techniques required for developing effective and workable financial solutions at the executive level
- study the concepts of financial risk, return, and the valuation of bonds, common and preferred stock, cost of capital, capital budgeting, capital structure, and the evaluation of investment opportunities

UNIT I INDUSTRIAL FINANCE

Indian Capital Market – Basic problem of Industrial Finance in India. Equity – Debenture financing – Guidelines from SEBI, advantages and disadvantages and cost of various sources of Finance - Finance from international sources, financing of exports – role of EXIM bank and commercial banks.– Finance for rehabilitation of sick units. (9 Hours)



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UNIT II SHORT TERM-WORKING CAPITAL FINANCE

Estimating working capital requirements – Approach adopted by Commercial banks, Commercial paper- Public deposits and inter corporate investments. **(9 Hours)**

UNIT III ADVANCED FINANCIAL MANAGEMENT

Appraisal of Risky Investments - certainty equivalent of cash flows and risk adjusted discount rate - risk analysis in the context of DCF methods using Probability information - nature of cash flows - Sensitivity analysis - Simulation and investment decision, Decision tree approach in investment decisions. **(9 Hours)**

UNIT IV FINANCING DECISION

Simulation and financing decision - cash inadequacy and cash insolvency - determining the probability of cash insolvency- Financing decision in the Context of option pricing model and agency costs- Inter-dependence of investment- financing and Dividend decisions. **(9 Hours)**

UNIT V CORPORATE GOVERNANCE

Corporate Governance - SEBI Guidelines- Corporate Disasters and Ethics-Corporate Social Responsibility- Stakeholders and Ethics- Ethics, Managers and Professionalism. **(9 Hours)**

OUTCOME :

CO1 Apply time-value-of-money techniques to the valuation of bonds and common and preferred stock.

CO2 Estimate the relevant cash flows and the appropriate discount rates in making capital budgeting decisions.

CO3 Examine the factors that drive a company's need for external financing and for determining the optimal mix of debt and equity financing.

CO4 Analyze the relationship between risk and return in the evaluation of investment opportunities.

CO5 Brief outline on the guidelines of SEBI

REFERENCES :

1. Richard A.Brealey, Stewart C.Myers and Mohanthy, Principles of Corporate Finance, Tata McGraw Hill, 9th Edition, 2011
2. I.M.Pandey, Financial Management, Vikas Publishing House Pvt., Ltd., 12th Edition, 2012.
3. Brigham and Ehrhardt, Corporate Finance - A focused Approach, Cengage Learning, 2nd Edition, 2011.
4. M.Y Khan, Indian Financial System, Tata McGraw Hill, 6th Edition, 2011
5. Smart, Megginson, and Gitman, Corporate Finance, 2nd Edition, 2011.
6. Krishnamurthy and Viswanathan, Advanced Corporate Finance, PHI Learning, 2011.
7. Website of SEBI
8. Besley, Brigham, Parasuraman, Corporate Finance, Cengage Learning, 2015
9. Michael C.Ehrhardt, Eugene F.Brigham, Corporate Finance – A focused approach, Cengage Learning, 2011.
10. Madura, International Corporate Finance, 10th edition, Cengage Learning, 2014




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AMBT2930- SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT

| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|--|---|---|---|-----------|---|
| AMBT2930 | SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT | 3 | 0 | 0 | 3 | 3 |

OBJECTIVES :

- Enables student to Understand the nuances of stock market operations.
- To enable the students to understand the two main dimensions of the investment namely risk and return
- To understand the features of common stock.
- To be able to evaluate the performance of the portfolio

UNIT I INVESTMENT SETTING

Financial and economic meaning of Investment – Characteristics and objectives of Investment – Types of Investment – Investment alternatives – Choice and Evaluation – Risk and return concepts. (9 Hours)

UNIT II SECURITIES MARKETS

Financial Market - Segments – Types - - Participants in financial Market – Regulatory Environment, Primary Market – Methods of floating new issues, Book building – Role of primary market – Regulation of primary market, Stock exchanges in India – BSE, OTCEI , NSE, ISE, and Regulations of stock exchanges – Trading system in stock exchanges –SEBI.

(9 Hours)

UNIT III FUNDAMENTAL ANALYSIS

Economic Analysis – Economic forecasting and stock Investment Decisions – Forecasting techniques. Industry Analysis : Industry classification, Industry life cycle – Company Analysis Measuring Earnings – Forecasting Earnings – Applied Valuation Techniques – Graham and Dodds investor ratios. (9 Hours)

UNIT IV TECHNICAL ANALYSIS

Fundamental Analysis Vs Technical Analysis – Charting methods – Market Indicators. Trend – Trend reversals – Patterns - Moving Average – Exponential moving Average – Oscillators – Market Indicators – Efficient Market theory. (9 Hours)




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UNIT V PORTFOLIO MANAGEMENT

Portfolio analysis – Portfolio Selection –Capital Asset Pricing model – Portfolio Revision
Portfolio Evaluation – Mutual Funds. **(9 Hours)**

COURSE OUTCOME:

CO1 Measure the risk and return of various investment avenues

CO2 understand the concept of Portfolio Management

CO3 understand various tools and methods of evaluating the portfolio.

CO4 Become a good investment analyst **CO 5** Expertise in Portfolio management

REFERENCES :

1. Donald E.Fischer & Ronald J.Jordan, Security Analysis & Portfolio Management, PHI Learning., New Delhi, 8th edition, 2011.
2. Prasannachandra, Investment analysis and Portfolio Management, Tata McGraw Hill, 2011.
3. Reilly & Brown, Investment Analysis and Portfolio Management, Cengage, 10th edition, 2016.
4. S. Kevin , Securities Analysis and Portfolio Management , PHI Learning , 2012.




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HUMAN RESOURCE MANAGEMENT

AMBT2932- ENTREPRENEURSHIP DEVELOPMENT

| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|------------------------------|---|---|---|-----------|---|
| AMBT2932 | ENTREPRENEURSHIP DEVELOPMENT | 3 | 0 | 0 | 3 | 3 |

OBJECTIVE:

- To instill a spirit of entrepreneurship among the student participants.
- To develop and strengthen entrepreneurial quality and motivation in students.
- To impart basic entrepreneurial skills and understandings to run a business efficiently and effectively
- Need, Problems & Development of Rural Entrepreneurship.

UNIT I ENTREPRENEURIAL COMPETENCE

Entrepreneurship concept – Entrepreneurship as a Career – Entrepreneurial Personality - Characteristics of Successful, Entrepreneur – Knowledge and Skills of Entrepreneur. (9 Hours)

UNIT II ENTREPRENEURIAL ENVIRONMENT

Business Environment - Role of Family and Society - Entrepreneurship Development Training and Other Support Organisational Services - Central and State Government Industrial Policies and Regulations - International Business. (9 Hours)

UNIT III BUSINESS PLAN PREPARATION

Sources of Product for Business - Prefeasibility Study - Criteria for Selection of Product - Ownership - Capital - Budgeting Project Profile Preparation - Matching Entrepreneur with the Project - Feasibility Report Preparation and Evaluation Criteria. (9 Hours)

UNIT IV LAUNCHING OF SMALL BUSINESS

Finance and Human Resource Mobilization Operations Planning - Market and Channel Selection - Growth Strategies - Product Launching – Incubation, Venture capital, IT startups. (9 Hours)




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UNIT V MANAGEMENT OF SMALL BUSINESS

Monitoring and Evaluation of Business - Preventing Sickness and Rehabilitation of Business Units- Effective Management of small Business. (9 Hours)

COURSE OUTCOME:

CO1 Students will gain knowledge and skills needed to run a business. **CO2** Small Enterprises their Characteristics, Rationale, Objectives & Scope **CO3** Factors affecting Entrepreneurial growth


CO4 Institutional Finance assistance available to Entrepreneurs for setting up an enterprise and Concept of Venture Capital and Various Evaluation Methods

CO5 Effective ways to launch and manage small business

REFERENCES:

1. Hisrich, Entrepreneurship, Edition 9, Tata McGraw Hill, New Delhi, 2014
2. S.S.Khanka, Entrepreneurial Development, S.Chand and Company Limited, New Delhi, (Revised Edition) 2013.
3. Mathew Manimala, Entrepreneurship Theory at the Crossroads, Paradigms & Praxis, Biztrantra, 2nd Edition ,2005
4. Prasanna Chandra, Projects – Planning, Analysis, Selection, Implementation and Reviews, Tata McGraw-Hill, 1996.
5. P.Saravanavel, Entrepreneurial Development, Ess Pee kay Publishing House, Chennai 1997.
6. Arya Kumar. Entrepreneurship. Pearson, 2012.
7. Donald F Kuratko, T.V Rao. Entrepreneurship: A South Asian perspective. Cengage, 2012




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AMBT2937- STRATEGIC HUMAN RESOURCE MANAGEMENT

| SUBJECT CODE | SUBJECT TITLE | L | T | P | TOTAL LTP | C |
|--------------|-------------------------------------|---|---|---|-----------|---|
| AMBT2937 | STRATEGIC HUMAN RESOURCE MANAGEMENT | 3 | 0 | 0 | 3 | 3 |

OBJECTIVE:

- To help students understand the transformation in the role of HR functions from being a support function to strategic function
- Understand the various terms used to define strategy & its process
- Understand HR strategies in Indian & global perspective

UNIT I HUMAN RESOURCE DEVELOPMENT

Meaning – Strategic framework for HRM and HRD – Vision, Mission and Values – Importance – Challenges to Organisations – HRD Functions - Roles of HRD Professionals - HRD Needs Assessment - HRD practices – Measures of HRD performance – Links to HR, Strategy and Business Goals – HRD Program Implementation and Evaluation – Recent trends – Strategic Capability , Bench Marking and HRD Audit.

(9 Hours)

UNIT II E-HRM

e- Employee profile– e- selection and recruitment - Virtual learning and Orientation – e - training and development – e- Performance management and Compensation design – Development and Implementation of HRIS – Designing HR portals – Issues in employee privacy – Employee surveys online.

(9 Hours)

UNIT III CROSS CULTURAL HRM

Domestic Vs International HRM - Cultural Dynamics - Culture Assessment - Cross Cultural Education and Training Programs – Leadership and Strategic HR Issues in International Assignments - Current challenges in Outsourcing, Cross border Mergers and Acquisitions - Repatriation etc - Building Multicultural Organisation - International Compensation.

(9 Hours)



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UNIT IV CAREER & COMPETENCY DEVELOPMENT

Career Concepts – Roles – Career stages – Career planning and Process – Career development Models– Career Motivation and Enrichment –Managing Career plateaus- Designing Effective Career Development Systems – Competencies and Career Management – Competency Mapping Models – Equity and Competency based Compensation.

(9 Hours)

UNIT V EMPLOYEE COACHING & COUNSELING

Need for Coaching – Role of HR in coaching – Coaching and Performance – Skills for Effective Coaching – Coaching Effectiveness– Need for Counseling – Role of HR in Counseling - Components of Counseling Programs – Counseling Effectiveness – Employee Health and Welfare Programs – Work Stress – Sources - Consequences – Stress Management Techniques.- Eastern and Western Practices - Self Management and Emotional Intelligence.

(9 Hours)

COURSE OUTCOME:

CO1 Analyse problems and develop managerial solutions to employment relations problems at both national and workplace level.

CO2 Demonstrate the application of problem solving and evaluation skills in HRM through exercises and case study work

CO3 Communicate knowledge of SHRM and employment relations in both written and verbal formats reactive to both audience and purpose.

CO4 Investigate and communicate the professional values of HRM including the ethical problems inherent in HRM professionals, including managers and consultants

CO5 Understand the various Components of Counseling Programs

REFERENCES :

1. Randy L. Desimone, Jon M. Werner – David M. Mathis, Human Resource Development, Cengage Learning, Edition 6, 2012.
2. Paul Boselie. Strategic Human Resource Management. Tata McGraw Hill. 2012.
3. Jeffrey A Mello, Strategic Human Resource Management, Cengage, Southwestern 2007.
4. Robert L. Mathis and John H. Jackson, Human Resource Management, Cengage, 2007.
5. Monir Tayeb. International Human Resource Management. Oxford. 2007
6. Randall S Schuler and Susan E Jackson. Strategic Human Resource Management. Wiley India. 2nd edition
7. McLeod. The Counsellor's workbook. Tata McGraw Hill. 2011



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AMBT3939- SUPPLY CHAIN MANAGEMENT

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|--------------|-------------------------|---|---|---|-----------|---|
| AMBT3939 | SUPPLY CHAIN MANAGEMENT | 3 | 0 | 0 | 3 | 3 |

OBJECTIVE:

- To develop an understanding of the strategic importance of SCM and how it can provide a competitive advantage in the marketplace
- To develop knowledge of the issues related to designing and managing SCM and the techniques to do so.
- To help understand the importance of and major decisions in supply chain management for gaining competitive advantage

UNIT I INTRODUCTION

Supply Chain – Fundamentals –Evolution- Role in Economy - Importance - Decision Phases - Supplier- Manufacturer-Customer chain. - Enablers/ Drivers of Supply Chain Performance. Supply chain strategy - Supply Chain Performance Measures. **(9 Hours)**

UNIT II STRATEGIC SOURCING

Outsourcing – Make Vs buy - Identifying core processes - Market Vs Hierarchy - Make Vs buy continuum -Sourcing strategy - Supplier Selection and Contract Negotiation. Creating a world class supply base- Supplier Development - World Wide Sourcing. **(9 Hours)**

UNIT III SUPPLY CHAIN NETWORK

Distribution Network Design – Role - Factors Influencing Options, Value Addition – Distribution Strategies - Models for Facility Location and Capacity allocation. Distribution Center Location Models. Supply Chain Network optimization models. Impact of uncertainty on Network Design - Network Design decisions using Decision trees. **(9 Hours)**

UNIT IV PLANNING DEMAND, INVENTORY AND SUPPLY

Managing supply chain cycle inventory. Uncertainty in the supply chain – Analyzing impact of supply chain redesign on the inventory - Risk Pooling - Managing inventory for short life - cycle products -multiple item -multiple location inventory management. Pricing and Revenue Management **(9 Hours)**

UNIT V CURRENT TRENDS

Supply Chain Integration - Building partnership and trust in SC Value of Information: Bullwhip Effect - Effective forecasting - Coordinating the supply chain. . SC Restructuring - SC Mapping - SC process restructuring, Postpone the point of differentiation – IT in Supply Chain - Agile Supply Chains -Reverse Supply chain, Agro Supply Chains. **(9 Hours)**



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NEW COURSES FOR THE ACADEMIC YEAR 2018-2019

BACHELOR OF BUSINESS ADMINISTRATION

| S.No | Programme Code | Programme Name | Course Code | Name of the Course |
|------|----------------|-------------------------------------|-------------|---|
| 1 | CMU | Bachelor of Business Administration | 316UBBT01 | FINANCIAL MANAGEMENT |
| 2 | BAU | Bachelor of Business Administration | 316UBBT02 | ORGANISATIONAL BEHAVIOUR |
| 3 | BAU | Bachelor of Business Administration | 316UBBT03 | COMPUTER APPLICATION IN BUSINESS |
| 4 | BAU | Bachelor of Business Administration | 316UBBT04 | MARKETING MANAGEMENT |
| 5 | BAU | Bachelor of Business Administration | 316UBBT05 | ALLIED III: BUSINESS MATHEMATICS AND STATISTICS |
| 6 | BAU | Bachelor of Business Administration | 416UBBT01 | HUMAN RESOURCE MANAGEMENT |
| 7 | BAU | Bachelor of Business Administration | 416UBBT02 | BUSINESS REGULATORY FRAMEWORK |
| 8 | BAU | Bachelor of Business Administration | 416UBBT03 | FINANCIAL SERVICES |
| 9 | BAU | Bachelor of Business Administration | 416UBBT04 | MANAGEMENT INFORMATION SYSTEM |
| 10 | BAU | Bachelor of Business Administration | 416UBBT05 | ALLIED IV: OPERATIONS RESEARCH |
| 11 | BAU | Bachelor of Business Administration | 416UCCT04 | SOFT SKILLS |




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SEMESTER III

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|-----------|----------------------|---|---|---|---|
| 316UBBT01 | FINANCIAL MANAGEMENT | L | T | P | C |
| | | 5 | 0 | 0 | 5 |

316UBBT01 – FINANCIAL MANAGEMENT

Course Objectives:

- To understand the foundations of finance and financing decisions, Working Capital and Long term sources of finance.
- To acquaint the students with the theory and techniques of financial management, and developing their abilities in respect of investment and capital budgeting, financial planning, capital structure decisions, dividend policy and working capital management.
- To develop the analytical skills for interpretation business information and application of financial theory in financing related decisions and situation

UNIT I

Meaning, objectives and Importance of Finance – Sources of finance – Functions of financial management – Role of financial manager in Financial Management.

UNIT II

Capital structures planning - Factors affecting capital structures – Determining Debt and equity proportion – Theories of capital structures – Leverage concept.

UNIT III

Cost of capital – Cost of equity – cost of preference capital – Cost of debt – Cost of retained earnings – weighted Average (or) composite cost of capital (WACC)

UNIT IV

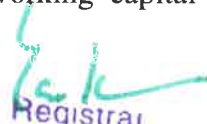
Dividend policies – Factors affecting dividend payment -Company Law provision on dividend payment –Various Dividend Models (Walter's Gordon's – M.M. Hypothesis)

UNIT V

Working capital – components of working capital – working capital operating cycle – Factors influencing working capital – Determining (or) Forecasting of working capital requirements.

Reference Books:





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1. Financial Management -I.M. Pandey
2. Financial Management – Prasanna Chandra
3. Financial Management – S.N. Maheswari
4. Financial Management – Y. Khan and Jain

COURSE OUTCOMES

- CO1** Understand the different financing decision and estimate the value of different financial instruments (including stocks and bonds)
- CO2** Decide the source of finance for an organisation and formulate the optimum Capital Structure
- CO3** Analyse the factors influencing the dividend decision and formulate the dividend policy of the firm
- CO4** Describe and assess how companies manage the components of working capital to minimize the cost of carrying current assets and the cost of short-term borrowing.
- CO5** Apply the concepts of financial management to contemporary financial events




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|-----------|--------------------------|---|---|---|---|
| 316UBBT02 | ORGANISATIONAL BEHAVIOUR | L | T | P | C |
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316UBBT02 – ORGANISATIONAL BEHAVIOUR

Course Objectives:

- To enable the students to gain insights into the concepts that go into the making of a successful organization.
- To obtain frameworks and tools to effectively analyze and approach various organizational situations.
- to help the students to gain a solid understanding of human behaviour in the workplace from an individual, group, and organizational perspective

UNIT I

Need and scope of organizational behavior -Theories of organization -Individual difference Vs Group intelligence tests -Measurement of intelligence -Personality Tests -Nature -Types and uses of perception.

UNIT II

Motivation -Financial and non -Financial motivational techniques -Job satisfaction -meaning -Factors -Theories -Measurement -Morale -Importance -Employee attitudes and behavior and their significance to employee productivity.

UNIT III

Work environment -Good house keeping practices -Design of work place -Fatigue -Causes and prevention and their importance -Leadership -Types and theories of leadership

UNIT IV

Group dynamics -Cohesiveness -Co-operation -Competition -Resolution -Sociometry -Group norms -Role position status

UNIT V

Organizational culture and climate -Organizational Development



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Recommended Books

1. Uma Sekaran, Organisational Behaviour Text & cases, 2nd edition, Tata McGraw Hill Publishing CO.Ltd
2. Gangadhar Rao, Narayana, V.S.P Rao, Organisational Behaviour 1987, Reprint 2000, Konark Publishers Pvt.Ltd , 1 st edition
3. S.S. Khanka , Organisational Behaviour , S.Chand & Co , New Delhi.
4. J.Jayasankar , Organisational Behaviour , Margham Publications , Chennai . 3.

Course Outcomes

CO1 Describe the personality and it's determinate of personality.

CO2 Write down the decision marketing and its classified into individual, group division making.

CO3 Describe the leadership and its quality of lenders, behaviors of lender, Classification of leader.

CO4 Classify the stress and managing stress

CO5 Identify the organization change and steps in managing change.

CO6 Write down the organizational development and its objectives.




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|-----------|--------------------------------------|---|---|---|---|
| 316UBBT03 | COMPUTER APPLICATIONS IN BUSINESS | L | T | P | C |
| | | 5 | 0 | 0 | 5 |

316UBBT03 COMPUTER APPLICATIONS IN BUSINESS

Course Objectives

- Know the tools and techniques of MS-Office.
- Knowledge on data base management system concepts and application
- Understand the importance of IS audit

UNIT – I

Word Processing: Meaning and role of word processing in creating of documents, Editing, formatting and printing documents using tools such as spell check, thesaurus, etc., in word processors (MS Word), Electronic Spreadsheet, Structure of Spread sheet and its applications to accounting, finance, and marketing functions of business; Creating a dynamic/ sensitive worksheet; Concept of absolute and relative cell – reference; Using built – in functions; Goal seeking and solver tools; Using graphics and formatting to worksheet; Sharing data with other desktop applications; Strategies of creating error –free worksheet (MS Excel)

UNIT – II

Programming under a DBMS environment :The concept of data base management system; Data field, records, and files, Sorting and Indexing data; Searching records. Designing queries, and reports; Linking of data files; Understanding programming environment in DBMS; Developing menu driven applications in query language (MS – Access).

UNIT – III

Electronic Data Interchange (EDI) :Introduction of EDI - Basics of EDI; edi standards; Financial EDI (FEDI) FEDI for international trade transaction; Applications of EDI, Advantages of EDI; Future of EDI.

UNIT – IV

The internet and its basic concepts: Internet concept, History, Development in India: Technological foundation of internet; Distributed computing; Client – server computing; internet protocol suite; Application of distributed computing; Client server computing; Internet protocol suite in the internet environment; Domain Name System (DNS); Generic Top – Level Domain (gTLD); Country code Top Level Domain (ccTLD) – India; Allocation of second level domains; IP addresses, Internet protocol; Applications of Internet in business, Education, Government, etc.



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UNIT – V

Information System Audit :Basic idea of information audit; - Difference with the traditional concepts of audit; Conduct and applications of IS audit in internet environment.

Reference Books

1. Agarwala Kamlesh N and Agarwala Deeksha – Business on the Net – Introduction to E-Commerce
2. Goyal – Management Information System.
3. Minoli Daniel, Minoli Emma – e Commerce Technology Handbook.
4. Kanter – Managing with informations.

COURSE OUTCOMES

- CO1 To learn the usage of word processor and electronic spreadsheet
- CO2 To understand the importance of DBMS and its applications in query language.
- CO3 To study the concept of EDI and its applications.
- CO4 To learn Internet Basics and realize the difference between Distributed computing & Client / Server computing.
- CO5 To understand IS audit and its applications.




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|-----------|----------------------|---|---|---|---|
| 316UBBT04 | MARKETING MANAGEMENT | L | T | P | C |
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316UBBT04 – MARKETING MANAGEMENT

Course Objective:

- To study & critically analyse the basic concepts in marketing & to cater the needs of marketing industries.
- To enable the students get insights into the fundamentals of marketing as well as the significance of 4 Ps in the success of any organization.
- To equip the students with understanding of the Marketing Mix elements and sensitize them to certain emerging issues in Marketing

UNIT I

Fundamentals of marketing - Role of Marketing - Relationship of Marketing with other functional areas - concept of marketing mix-Marketing approaches - Various Environmental factors affecting the marketing functions.

UNIT II

Buyer Behavior - Consumer goods and Industrial goods - Buying motives - Factors influencing buyer Behaviour Market segmentation - Need and basis of Segmentation -Targeting - positioning.

UNIT III

The Product - Characteristics - benefits - classifications - consumer goods - industrial goods - New Product Development process - Product Life Cycle - Branding -Packaging.

UNIT IV

Physical Distribution: Importance - Various kinds of marketing channels - distribution problems. Sales management: Motivation, Compensation and Control of salesmen.




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UNIT V

A brief overview of: Advertising - Publicity - Public Relations - personal Selling - Direct selling and Sales promotion.

Recommended Texts

1. Philip Kotler, 2003, Marketing Management, 11th edition, Pearson Education (Singapore) Pte Ltd, New Delhi.
2. V.S. Ramaswamy & S. Namakumari, 1994, Principles of Marketing, first edition, S.G. Wasani / Macmillan India Ltd, New Delhi.
3. C. Rainfield, Marketing Management, Palgrave Macmillan
4. Sontakki .C.N , Marketing Management, Kalyani Publishers, Ludhiana
5. Gary Armstrong & Philip Kotler, 2003, Marketing -An Introduction, sixth edition, Pearson Education (Singapore) Pvt Ltd, New Delhi
6. R.S.N. Pillai and Bagavathi ,Modern Marketing , S.Chand & Co , New Delhi.
7. Jayasankar, Marketing, Margham publications, Chennai.

Course Outcome:

- CO1 Students understood about the marketing and its various environmental factors
- CO2 Gained knowledge on buyer behavior and market segmentation
- CO3 Students learnt about various stage in Product Life Cycle
- CO4 Gained knowledge in the marketing channels and sales management
- CO5 Students gained knowledge on advertising and sales promotion




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| 416UBBT01 | Human Resource Management | L | T | P | C |
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416UBBT01 Human Resource Management

Course Objectives:

- The objective of the course is to equip students with knowledge, skill and competencies to manage people in the organization
- To familiarize the students with the HRM practices, HR planning, Training Activities, Compensation and reward Planning, Performance Appraisal system in an organization.
- To provide an insight into the importance of motivation, counseling to create a stress free environment.

UNIT I

Nature and scope of Human Resources Management –Differences between personnel management and HRM –Environment of HRM –Human resource planning –Recruitment –Selection –Methods of Selection –Uses of various tests –interview techniques in selection and placement.

UNIT II

Induction –Training –Methods –Techniques –Identification of the training needs –Training and Development –Performance appraisal –Transfer –Promotion and termination of services –Career development.

UNIT III

Remuneration –Components of remuneration –Incentives –Benefits –Motivation –Welfare and social security measures.

UNIT IV

Labour Relation –Functions of Trade Unions –Forms of collective bargaining-Workers' participation in management –Types and effectiveness –Industrial Disputes and Settlements (laws excluded)

UNIT V

Human Resource Audit –Nature –Benefits –Scope –Approaches.




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REFERENCE BOOKS :

1. Human Resource Management –V S P Rao
2. Human Resource Management –Ashwathappa
3. Human Resource Management – Garry Deseler
4. Human Resource Management –L M Prasad
5. Human Resource Management –Tripathi.

Course Outcomes:

- CO1** Understand the HR environment in India and human resource functions within organizations.
- CO2** Plan human resources requirement and formulate HR policy of the organisation with regard to recruitment, selection, training and career planning.
- CO3** Appraise the employee's performance and formulate compensation policy which helps to make organizational excellence.
- CO4** Understand the importance of workers participation in management and creating stress free work environment through counseling and mentoring.
- CO5** Analyse the ethical issues in HR management.




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| 416UBBT02 | Business Regulatory Framework | L | T | P | C |
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416UBBT02 - Business Regulatory Framework

Course Objectives:

- To impart in depth knowledge of the Law of contracts which forms, the foundation of all day to day obligations in the business world.
- To instill in the students an awareness of legal framework in sale of goods, consumer protection to understand the applications of these laws to practical commercial situations.
- To acquaint the students with the various laws relating to cyber activities and towards intellectual properties

UNIT I

Brief outline of Indian Contracts Act -Special contracts Act -Sale of goods Act -Contract of Agency

UNIT II

Brief outline of Indian Companies Act 1956.

UNIT III

Brief outline of FEMA -Consumer Protection Act

UNIT IV

The laws of Trade Marks -Copyright -Patents -Designs -Trade related Intellectual Property Rights. (TRIPS) RTP -IDRA -an overview

UNIT V

Brief outline of Cyber Laws




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Recommended Text books

1. N.D.Kapoor, 1993, Business Laws, Sultan Chand, New Delhi
2. K.S.Anantharaman, 2003 Business and Corporate Laws ,Sitaraman&co. Pvt.Ltd.
3. Chandrasekaran ,2004 Sitaraman&co Pvt Ld , Intellectual Property Law
4. Bare Acts-FEMA , Consumer Protection Act
5. Acharya -2004, Intellectual Property Rights Asia Law House Publication,

Course Outcomes:

- CO1** Acquired knowledge on contract and sale of goods Act
- CO2** Learnt on companies Act and procedures
- CO3** Gained knowledge on various foreign regulations and consumer rights and duties
- CO4** Acquired knowledge on how the inventions to be patented
- CO5** Gained knowledge on how the transactions to be digitalized and regulations with respect to cyber laws



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| 416UBBT03 | Financial Services | L | T | P | C |
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416UBBT03 Financial Services

Course Objectives:

- To understand the operational nuances of financial manager
- To comprehend the techniques of making decisions related to finance functions.
- The course also provides information about the prevailing financial system in India

UNIT I

Meaning and importance of financial services –Types of financial services –Financial services and economic environment –Players in Financial Services Sector.

UNIT II

Merchant Banking –Functions –Issue management –Managing of new issues –Underwriting –Capital market –Stock Exchange –Role of SEBI

UNIT III

Leasing and Hire purchase –Concepts and features –Types of lease Accounts. Factoring –Functions of Factor

UNIT IV

Venture Capital –Credit Rating –Consumer Finance

UNIT V

Mutual Funds :Meaning –Types –Functions –Advantages –Institutions Involved –UTI



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REFERENCE BOOKS

1. Financial Services –M.Y.Khan
2. Financial Services –B.Santhanam
3. Law of Insurance –Dr.M.N. Mishra
4. Indian Financial System –H.r. Machiraju
5. A Review of current Banking Theory and Practice –S.K. Basu.

Course Outcomes:

- CO1 - Students gained knowledge on role of financial service sector
- CO2 - Acquired knowledge on functions of NIM, SEBI
- CO3 - Students understood the concepts of leasing, factoring and hire purchase
- CO4 - Gained knowledge on project investment
- CO5 - Learnt the concept of role of UTI and mutual funds




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| 416UBBT04 | Management Information System | L | T | P | C |
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416UBBT04 - Management Information System

Course Objectives:

- To enable the students to gain an understanding about how Information Systems are developed, implemented and assisted in decision making in an organizations.
- To familiarize the students with the four components of an MIS and understand how it add value to an organization.
- To design system for an organisation and identify privacy, security, and freedom of information issues in a business environment.

UNIT I

Definition of Management Information System -MIS support for planning, Organizing and controlling -Structure of MIS -Information for decision -making.

UNIT II

Concept of System -Characteristics of System -Systems classification -Categories of Information Systems -Strategic information system and competitive advantage.

UNIT III

Computers and Information Processing -Classification of computer -Input Devices -Output devices -Storage devices, -Batch and online processing. Hardware -Software. Database management Systems.

UNIT IV

System Analysis and design -SDLC -Role of System Analyst -Functional Information system -Personnel, production, material, marketing.

UNIT V

Decision Support Systems -Definition. Group Decision Support Systems -Business Process Outsourcing -Definition and function.



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Recommended Books:

1. Mudrick & Ross, "Management Information Systems", Prentice -Hall of India .
2. Sadagopan, "Management Information Systems" -Prentice-Hall of India
3. CSV Murthy - "Management Information Systems" Himalaya publishing House .
4. Dr. S.P. Rajagopalan, "Management Information Systems and EDP " , Margham Publications , chennai .

Course Outcomes:

- CO1** - Students gained knowledge on MIS and its support for planning, organizing and support for controlling
- CO2** - Students learnt about different concept of system
- CO3** - Gained knowledge on various element of computer and its accessories
- CO4** - Students gained knowledge on SDLC and corresponding professional course
- CO5** - Acquired knowledge on different support systems




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| 416UBBT05 | OPERATION RESEARCH | L | T | P | C |
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416UBBT05 - OPERATION RESEARCH

Course Objectives:

- To provide a formal quantitative approach to problem solving and to introduce some widely-used mathematical models in solving business operations issues,
- To provide an insight into basic linear programming, transportation and assignment technique, queuing model and replacement model to students to solve management problems.
- To provide necessary inputs for optimum utilisation of resources by employing operational research techniques

UNIT –I

Introduction to OR –Meaning and scope –Characteristics –models in OR.LPP-Formulation graphical method –Simplex method-Big M Method application in Business –merits and Demerits.

UNIT –II

Transportation model –basic feasible solution –formulation, solving a TP. Assignment models –formulation –solution.

UNIT –III

Network analysis –work break down analysis –construction –numbering of event. Time Calculation –critical path, slack, float –application.

UNIT –IV

Queuing models-elements of queuing system –characteristics of queuing model.

UNIT –V

Decision theory –statement of Baye’s theorem application. Probability –decision trees. Game theory meaning and characteristics –saddle point –Dominance property.



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RECOMMENDED TEXTS/ REFERANCE BOOKS

1. P.R. Vittal & V. Malini, Operative Research – Margham Publications – Chennai – 17.
2. P.K. Gupta & Man Mohan, Problems in Operations Research – Sultan Chand & Sons – New Delhi
3. V.K. Kapoor, Introduction to Operational Research – Sultan Chand Sons – New Delhi
4. Hamdy A. Taha, Operation Research – An Introduction Prentice Hall of India – New Delhi.

Course Outcomes:

- CO1 Demonstrate the techniques of operations research and application to modern business
- CO2 Solve and apply LPP for profit maximization and cost minimization in an organization.
- CO3 Formulate effective models for real world OR problems
- CO4 Apply the queuing model and replacement model for enhancing operational efficiency
- CO5 Apply transportation and assignment technique for optimization in business operations




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| 416UCCP04 | SOFT SKILLS (COMMON TO ALL UG BRANCHES) | L | T | P | C |
| | | 5 | 0 | 0 | 5 |

416UCCP04 – SOFT SKILLS (COMMON TO ALL UG BRANCHES)

Semester- IV- COMPUTING SKILLS – LEVEL II

Objective:

The major objective in introducing the course is to impart hands on training to students in Microsoft Office essentials like MS Word, MS Excel and MS Access. The course is basic course offered at two levels exclusively meant for students with no computer knowledge. Course is designed as a practical oriented course and not for chalk and board teaching.

Pre- requisite : Essentials of Microsoft office as given in Level I

Unit 1 : Word processing - Auto formatting; Paragraph and character styles – creating , modifying and using styles; Templates – modifying, attaching and controlling; Tables and columns - creating, manipulating and formulating; mail merge; labels creating

Unit 2 : Data Management – MS Access - Introduction, concepts and terms; database and tables- creating, data types, editing fields, renaming, resizing of fields, finding, sorting and displaying of data –printing

Unit 3 : Spreadsheets – MS Excel – Worksheets – moving, copying, sorting, inserting of cells, rows, columns; Charts – creating, editing, adding, rotating, printing, deleting and controlling; graphics- creating and placing, drawing lines and shapes; using multiple worksheets ; printing

Unit 4 : Presentations – Power point- starting, browsing and saving, creating, editing, formatting of text and paragraphs, inserting tables and charts; Presentation through slides, handouts and printing.

Unit 5 : Graphics and Multimedia - Clip art – create and insert; shapes- draw, insert and copy; create a flow

Note – Unit 1 -5 are to be taught as practical with hands on experience



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References :

1. Introduction to Computers – Peter Norton, Tata McGraw-Hill, India
2. Microsoft 2003 – Jennifer Ackerman Kettel et al., Tata Mc-Graw Hill, India
3. Working In Microsoft office 2006– Ron Mansfield , Tata Mc-Graw Hill, India

Examinations :

1. Sessional tests could be based on Theory and practical
2. End semester is based on practical examination only



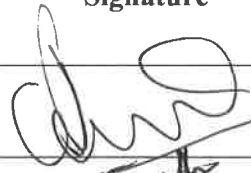
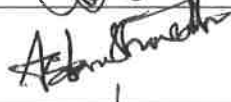
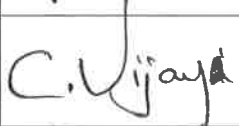
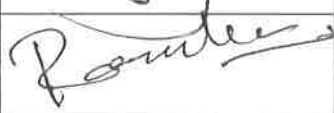


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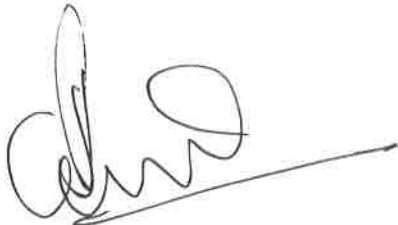
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**MINUTES OF THE 6th MEETING OF THE BOARD OF STUDIES IN
DEPARTMENT OF COMMERCE**

Held on 21-08-2018

Members Present

| S. No | Name | Designation | Member | Signature |
|-------|-----------------------|--|------------------------|---|
| 1 | Dr. S. Panneer Selvam | Professor & Head | Chairman |  |
| 2 | Dr. A. Senthilnathan | Associate Professor | Member |  |
| 3 | Dr..C.Vijay | Assistant Professor | Member |  |
| 4 | Dr.T.Ramachandran | Professor, SRM University, Kattankulathur. | Academic Expert Member |  |
| 5 | Dr.B.Sankaran | Professor, SPCET | Academic Expert Member |  |
| 6 | Mr.G.Sathyaseelan, | Vice-President, Ashok Leyland, Ennore | Industrial Expert |  |


Chairman




Registrar

Dr.S.PANNEERSELVAM
M.Com, MCA., M.Phil, Ph.D
HOD / Commerce
St. Peter's Institute of Higher Education & Research
St. Peter's Institute, Chennai-600 054

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- 6.1 Considered the minutes of the 5th meeting of Board of Studies in B.Com.(Commerce) and B.Com (Corporate Secretary ship) held on 13.03.2018.

RESOLVED that the minutes of the 5th meeting of Board of Studies in B.Com.(Commerce) and B.Com (Corporate Secretary ship) held on 13.03.2018 be confirmed

- 6.2 Reviewed the Regulation and Syllabi of VI semester of B.Com.(Commerce) and IV th semester of B.Com (Corporate Secretary ship) programmes under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of VI semester of B.Com.(Commerce) and IV th semester of B.Com (Corporate Secretary ship) under the Regulations 2016 with Choice Based Credit System (CBCS) to be continued.

- 6.3 Reviewed the Regulation and Syllabi of VI semester of B.Com.(Commerce) and IV th semester of B.Com (Corporate Secretary ship) programmes under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi VI semester of B.Com.(Commerce) and IV th semester of B.Com (Corporate Secretary ship) programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include the new elective course.

- 6.4 Reviewed the Regulation and Syllabi of IV th semester of M.Com and M.Phil under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of IV th semester of M.Com and M.Phil under the Regulations 2016 with Choice Based Credit System (CBCS) to be continued

- 6.5 Reviewed the Regulation and Syllabi of IV th semester M.Com and M.Phil under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Regulation and Syllabi of IV th semester M.Com under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

- 6.6 Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.

RESOLVED that the syllabi of B.Com.(Commerce) and B.Com (Corporate Secretary ship) programme under the Regulations 2016 and M.Com and M.Phil under the Regulations of 2016 developed having relevance to the local/national/regional/global



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developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved, **RESOLVED** that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Com.(Commerce) and B.Com (Corporate Secretary ship) under the Regulations 2016 and M.Com under the Regulations 2016 to be approved.

6.7 Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of B.Com.(Commerce) and B.Com (Corporate Secretary ship), M.Com and M.Phil.

RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on "Carrier Guidance in Banking and Home Made Herbal Medicine" be approved for the upcoming semester (2018-19 – Even semester).

6.8 Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.

Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix – I).

Date: 21.08.2018



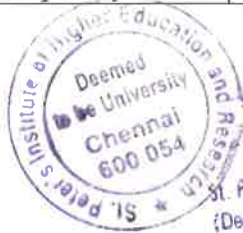
Chairman
Dr.S.PANNEERSELVAM
M.Com, MBA., M.Phil., Ph.D
HOD / Commerce
St. Peter's Institute of Higher Education & Research
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Appendix – I

| Programme | Stakeholder | Feedback | Recommendation | Action taken |
|-----------|-------------|--|---|---|
| B. Com. | Student | Students suggested the need for job oriented courses, training for facing interviews during campus selection. They also requested to provide career guidance and expert talks by industrialists. | To offer multilingual program for advancing computer education. | Carrier guidance programs were given and counseling cell supported the development of soft skills and communication ability. |
| | Teacher | Teaching methods and teaching aids must be improved | Suggested for advance learning | ICT methods and smart boards were Used for effective teaching. Computer centre promoted (FOSS) Free Open Source Software to all services will provided in the campus to run web, mail, LDAP and MODLE |
| | Alumni | More emphasis should be on the applications of the opted field of study. Focus more on inter-disciplinary | Suggested for Inter-disciplinary projects. | Inter departmental research initiatives was encouraged. |




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**MINUTES OF THE 4th MEETING OF THE BOARD OF STUDIES IN
ECONOMICS
Held on 27th August 2018**

Members Present

- (1) Mrs. R. Anuradha, Asst. Professor & Head - Chairperson
 (2) Dr. M. Sudhakar, Assistant Professor - Internal Member
 (3) Dr. G. Yoganantham, Professor - External Member
 Dept. of Economics, Thiruvalluvar University, Vellore.
 (4) Mr. Peter Sahayaraj, - External Member
 Director, Jayam Academic, Chennai

R. Anuradha
M. Sudhakar
G. Yoganantham
P. Sahayaraj

| | |
|-----|---|
| 4.1 | Considered the minutes of the 3 rd meeting of Board of Studies in Economics held on 16.03.2018. RESOLVED that the minutes of the 3 rd meeting of Board of Studies in Economics on 16.03.2018 be confirmed. |
| 4.2 | Reviewed Syllabi of Economics prescribed for Commerce and Management Studies programmes under the Regulations 2016. RESOLVED that the Syllabi of Economics prescribed for Commerce and Management Studies programmes under the Regulations 2016 be continued. |
| 4.3 | Reviewed the Regulations & Syllabi of B. A. Economics programme under the Regulations 2016. RESOLVED that the Regulations & Syllabi of B.A Economics programme under the Regulations 2016 be continued. |
| 4.4 | Reviewed and considered the curriculum feedback analysis and action taken report collected from stakeholders. NOTED the curriculum feedback analysis and action taken report collected from stakeholders be included in the appropriate place in the syllabi (Appendix 1). |



Date: 27.08.2018

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Registrar

R. Anuradha
Chairperson

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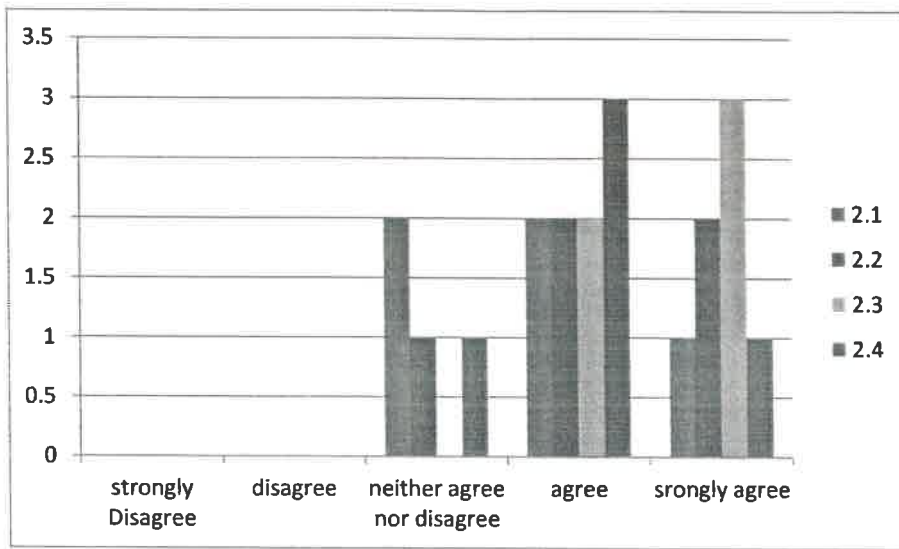
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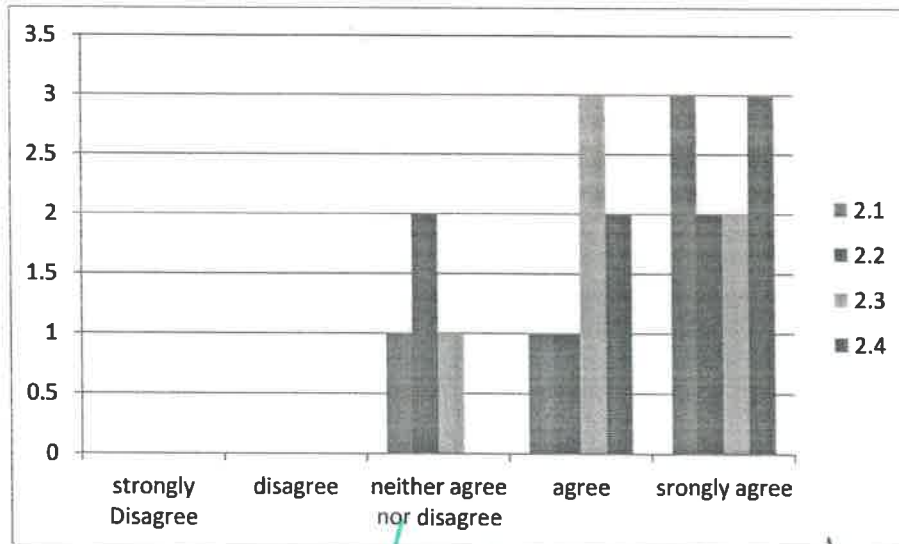
(Appendix 1)

FEEDBACK ANALYSIS (2017-18)

STUDENTS FEEDBACK



TEACHERS FEEDBACK



Date: 27.08.2018

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R. Senthil
Chairperson

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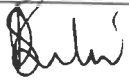



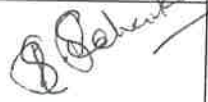

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MINUTES OF THE 18th MEETING OF THE BOARD OF STUDIES IN COMPUTER SCIENCE & APPLICATIONS

Held on 23.08.2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|-----------------------|--|-------------|---|
| 1. | Dr. R.Latha | Professor & Head | Chairperson |  |
| 2. | Mrs.S.Brindha | Assistant Professor | Member |  |
| 3. | Mr. M.C.Babu | Assistant Professor | Member |  |
| 4. | Mrs. R.Subhashni | Assistant Professor | Member |  |
| 5. | Dr.S.Selvakani | Assistant Professor | Member |  |
| 6. | Mr. E.SAi Dinesh Babu | Operations Manager, Amazon Development Centre India Pvt.Ltd, Ch. | Member |  |




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Chairperson

| | |
|------|--|
| 18.1 | <p>Considered the minutes of the 17th meeting of Board of Studies in Computer Applications and Computer Science held on 14.3.2018.</p> <p>RESOLVED that the minutes of the 17th meeting of Board of Studies in Computer Applications held on 23.08.2018 to be confirmed</p> |
| 18.2 | <p>Considered the provision for the students of B.CA and B.Sc(CS) to have private study for the Non - Tamil and Non -English languages.</p> <p>RESOLVED that the the provision for the students of B.CA and B.Sc(CS), to have private study for the Non - Tamil and Non -English languages be approved.</p> |
| 18.3 | <p>Reviewed the Regulation & Syllabi of B.C.A and B.Sc(CS) programme under the Regulations 2016 with Choice Based Credit System (CBCS).</p> <p>RESOLVED that the Syllabi of B.C.A B.C.A and B.Sc(CS) programme under the Regulations 2016 with Choice Based Credit System (CBCS) to be continued.</p> |
| 18.4 | <p>Reviewed the Syllabi and course structure of M.Sc(CS) programmes under the Regulations 2016 with Choice Based Credit System (CBCS).</p> <p>RESOLVED that the Syllabi and course structure of M.Sc(CS) programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued taking into consideration of the suggestions and remarks given by the members to include following new courses. (Appendix - I)</p> |
| 18.5 | <p>Reviewed the curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes.</p> <p>RESOLVED that the syllabi of B.C.A programme under the Regulations 2016,B.Sc(CS) progrmme Under the Regulations 2016 and M.Sc(CS) programme under the Regulations 2016 developed having relevance to the local/national/regional/global developmental needs with learning objectives including programme outcomes, program specific outcomes and course outcomes of all the programmes be approved.</p> |
| 18.6 | <p>Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.C.A under the Regulations 2016, B.Sc(CS) under the Regulations 2016, M.Sc(CS) under the Regulations 2016.</p> <p>RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.C.A, B.Sc(CS),M.Sc(CS) under the Regulations 2016 to be approved.</p> |




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| | |
|--------------------|--|
| <p>19.7</p> | <p>Considered to include value added courses imparting transferable and life skills offered beyond the curriculum in the syllabi of BC.A, B.Sc(CS), M.Sc(CS).</p> <p>RESOLVED that the value added courses imparting transferable and life skills offered beyond the curriculum such as course on "Office Automation" be approved for the upcoming semester (2017-18 Odd semester).</p> |
| <p>19.8</p> | <p>Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders.</p> <p>Resolved that the curriculum feedback analysis and action taken report based on the suggestions given by the stake holders to be approved. (Appendix - III)</p> |

Date: 23.08.2018



Chairperson




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Website: www.spiher.ac.in

MINUTES OF THE 06th MEETING OF THE BOARD OF STUDIES IN
MATHEMATICS

HELD ON 27.08.2018

Members Present

| S.No | Name of the Member | Designation | Member |
|------|--------------------------------------|---|------------------------------|
| 1. | Dr. N. Srinivasan | Professor & Head, Department of Mathematics, SPIHER | Chairman |
| 2. | Mrs.S. Sreenivasan | Associate Professor, Department of Mathematics, SPIHER | Member |
| 3. | Mrs. S. Cynthiya Margaret Indrani | Assistant Professor, Department of Mathematics, SPIHER | Member |
| 4. | Mrs. D.L. Yamini Latha | Assistant Professor, Department of Mathematics, SPIHER | Member |
| 5. | Mr. M.V. Suresh | Assistant Professor, Department of Mathematics, SPIHER | Member |
| 6. | Dr B. Baskaran | Professor & HOD of Mathematics SRMIST, Vadapalani, Chennai. | Academic Expert Member |
| 7. | Mr.S. Santhanam | Associate Professor, Jaya College of Arts and Science, Nemilicheeri, Chennai. | Academic Expert Member |



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MINUTES OF THE 06th MEETING OF THE BOARD OF STUDIES IN

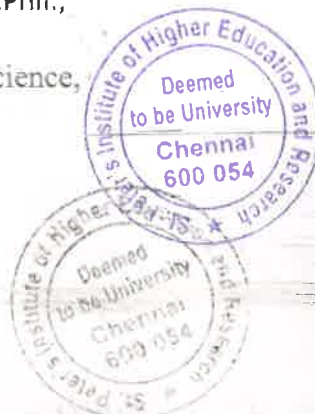
MATHEMATICS

HELD ON 27.08.2018

Members Present

| S No | Name of the Members & Address | Signature |
|------|--|------------------|
| 1 | Dr.N.Srinivasan, M.Sc, M.Phil, Ph.D Professor & Head, Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph-9840252113 | N. Srinivasan |
| 2 | Mrs.S. Sreenivasan, M.Phil, Associate Professor, Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph-9940075011 | S. Sreenivasan |
| 3 | Ms.S.Cynthiya Margaret Indrani, M.Sc. M.Phil Assistant Professor Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph-9840938703 | S. Cynthiya |
| 4 | Ms.D.L.Yaminilatha, M.Sc, M.Phil Assistant Professor Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph- 7358250241 | D.L. Yaminilatha |
| 5 | Mr.M.V.Suresh, M.Sc, B.Ed, M.Phil Assistant Professor Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph- 8056189677 | M.V. Suresh |
| 6 | Dr. B. Baskaran, M.Sc., M.Phil., Ph.D Professor and HOD of Mathematics, SRMIST, Vadapalani, Chennai. Ph-9444053649, baskaran_40@hotmail.com | B. Baskaran |
| 7 | Mr.S. Santhanam, M.Phil., Associate Professor, Jaya College of Arts and Science, Nemilicheeri, Chennai. | S. Santhanam |

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- 6.1 Considered the minutes of the 05th meeting of Board of Studies in mathematics held on 16.03.2018.
RESOLVED that the minutes of the 05th meeting of Board of Studies in Mathematics held on 16.03.2018 be confirmed.
- 6.2 Reviewed the Regulation & Syllabi of B.Sc. Mathematics programme and curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2016 with Choice Based Credit System (CBCS).
RESOLVED that the Syllabi of B.Sc. Mathematics programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued by taking into consideration of the suggestions and remarks given by the members to include the following new elective courses (**Annexure- I**)
- (i) 616UMMT04 – Elementary Number Theory
- 6.3 Reviewed the syllabi of Mathematics paper for BCA, B.Com., B.Sc., (Physics, Chemistry & Computer Science) under Regulations 2016 with Choice Based Credit System (CBCS).
RESOLVED that the syllabi of Mathematics paper for BCA, B.Com, B.Sc (Physics, Chemistry & Computer Science) under Regulations 2016 with Choice Based Credit System(CBCS) be continued.
- 6.4 Reviewed the Regulation & syllabi of M. Sc (Mathematics) and curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2016 with Choice Based Credit System (CBCS).
RESOLVED that the Syllabi of M.Sc. Mathematics programme under the Regulations 2016 with Choice Based Credit System(CBCS) be continued having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be



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continued by taking into consideration of the suggestions and remarks given by the members to include the following new elective courses (**Annexure- II**)

(i) 416PMMT06 – Mathematical Statistics

6.5 Reviewed the syllabi of Mathematics for MBA (Statistics for Management and Applied Operations Research) under Regulations 2016 with Choice Based Credit System (CBCS). **RESOLVED** that the syllabi of Mathematics for MBA (Statistics for Management and Applied Operations Research) under Regulations 2016 with Choice Based Credit System (CBCS) be continued.

6.6 Reviewed the syllabi of Mathematics prescribed for Engineering and Technology UG Programmes under Regulation 2018 with Choice Based Credit System (CBCS). **RESOLVED** that the Syllabi of Mathematics prescribed for Engineering and Technology UG Programmes under Regulation 2018 with Choice Based Credit System (CBCS) be continued.

6.7 Reviewed the syllabi of Mathematics prescribed for Engineering and Technology PG Programmes (ME/M.Tech) under Regulation 2018 with Choice Based Credit System (CBCS). **RESOLVED** that the syllabi of Mathematics prescribed for Engineering and Technology PG Programmes (ME/M.Tech) under Regulation 2018 be continued.

6.8 Considered the skill development courses in professional domains and branch specific areas to promote employment and competency among learners/necessary certification courses/Internship training.

Resolved that the skill development courses in professional domains and branch specific areas to promote employment and competency among learners/necessary certification courses/Internship training be continued. Value added courses to be conducted on

(i) Vedic Mathematics

With course duration of 33 hours for developing their skills

(**Annexure – III**).

6.9 Reviewed and considered the feedback analysis of curriculum and action taken report collected from the stake holders.



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RESOLVED that the curriculum feedback analysis and action taken report collected from the stake holders to be approved. (Annexure – IV)

Date: 27.08.2018

N. Sumivcan
Chairman



Lakshmi
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Lakshmi

Annexure – I
St. Peter's Institute of Higher Education and Research
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B. Sc Mathematics

616UMMT04 - ELEMENTARY NUMBER THEORY

Objective:

To provide the student with the concept and an understanding of basic concepts in divisibility, Chinese Remainder Theorem, Groups, rings, Quadratic Residues and Simultaneous Linear Equations.

Unit 1:

Introduction – divisibility- primes- The Binomial Theorem.

Chapter1: Sections - 1.1 to 1.4

Unit 2:

Congruence's, Solution of Congruence's, Chinese Remainder Theorem- primitive roots and power Residues- Number Theory from an Algebraic view point - Groups, rings and fields.

Chapter– 2: Sections 2.1 to 2.3, 2.8, 2.10.-2.11

Unit3:

Quadratic Residues, Quadratic reciprocity, The Jacobi Symbol

Chapter– 3: Sections 3.1 to 3.3

Unit 4:

Greatest Integer Function, Arithmetic function, The Mobius Inversion formula Combinational Number Theory

Chapter– 4: Sections 4.1 to 4.3 and 4.5

Unit 5:

The equation $ax+by=c$, Simultaneous Linear Equations, Pythagorean Triangle, Assorted examples.

Chapter– 5: Sections 5.1 to 5.4

Recommended Text:

1. An introduction to the Theory of Numbers (Vth edition) by Ivan Niven, Herbert S. Zuckerman and Hugh L. Montgomery John Wiley & Sons, Inc.2001.
2. Elementary theory of numbers, cy. Hsiung, Allied publishers,1995.
3. Introduction to Analytic Number Theory, Tom. M. Apostol, NarosaPublishingHouse, New Delhi,1989.

Reference Books:

1. Elementary Number Theory, Allyn and Bacon Inc., Boston,1980.
2. Elementary Number Theory by David M.Burton, Mc.Graw Hill International Editions,1998.



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Mapping with Programme Outcomes

| CO's\PO's \ PSO's | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PSO1 | PSO2 | PSO3 |
|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 1 | 2 | 2 | - | 1 | 2 | 1 | - | 2 | 1 | 2 |
| CO2 | 2 | 1 | 1 | - | 2 | 1 | 1 | - | 2 | 2 | 1 |
| CO3 | 1 | 2 | 2 | - | 1 | 2 | 1 | - | 2 | 1 | 2 |
| CO4 | 1 | 2 | 2 | - | 1 | 2 | 1 | - | 2 | 2 | 2 |
| CO5 | 2 | 1 | - | 2 | 1 | 1 | - | 2 | - | - | 1 |

3- Strong; 2-Medium; 1-Low

Course Outcomes

On the successful completion of the course, students will be able to

| CO Number | CO Statement | Knowledge Level |
|-----------|--|-----------------|
| CO1 | Explain the basics concepts of divisibility, primes, binomial Theorem | K1, K2, K3 |
| CO2 | Apply the concepts of Congruence's, Solution of Congruence's, Chinese Remainder Theorem | K1, K2, K3 |
| CO3 | Demonstrate the various methods of Quadratic Residues | K1, K2, K3 |
| CO4 | Apply the concepts of Greatest Integer Function, Arithmetic function, The Mobius Inversion formula . | K1, K2, K3 |
| CO5 | Apply the concepts Simultaneous Linear Equations. | K1, K2, K3 |

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Annexure – II
M. Sc Mathematics

416PMMT06 - MATHEMATICAL STATISTICS

Objective:

To initiate the study on Sample Moments and their Functions, Significance Test, Estimation, Analysis of Variance and Sequential Analysis

UNIT-I: Sample Moments and their Functions:

Notion of a sample and a statistic – Distribution functions of X , S^2 and $(S^2) - \chi^2$ distribution – Student t-distribution – Fisher's Z-distribution – Snedecor's F- distribution – Distribution of sample mean from non-normal populations

Chapter 9 : Sections 9.1 to 9.8

UNIT-II: Significance Test

Concept of a statistical test – Parametric tests for small samples and large samples - χ^2 test – Kolmogorov Theorem – Smirnov Theorem – Tests of Kolmogorov and Smirnov type – Wilcoxon-Mann-Whitney tests

Chapter 10 : Sections 10.11

Chapter 11: 12.1 to 12.7.

UNIT-III: Estimation

Preliminary notion – Consistency estimation – Unbiased estimates – Sufficiency – Efficiency – Asymptotically most efficient estimates – methods of finding estimates – confidence Interval.

Chapter 13: Sections 13.1 to 13.8 (Omit Section 13.9)

UNIT-IV: Analysis of Variance

One way classification and two-way classification.

Hypotheses Testing: power functions — Most Powerful test – Uniformly most powerful test – unbiased test.

Chapter 15 : Sections 15.1 and 15.2

Chapter 16 : Sections 16.1 to 16.5

UNIT-V: Sequential Analysis

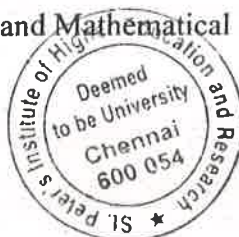
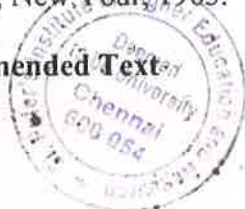
SPRT – Auxiliary Theorem – Wald's fundamental identity-OC function and SPRT – $E(n)$ and Determination of A and B – Testing a hypothesis concerning p on 0-1 distribution and m in Normal distribution.

Chapter 17 : Sections 17.1 to 17.9

Reference Books

1. **M. Fisz**, Probability Theory and Mathematical Statistics, John Wiley and sons, New York, 1963.

Recommended Text



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1. E.J.Dudewicz and S.N.Mishra, Modern Mathematical Statistics, John Wiley and Sons, New York, 1988.
2. V.K.Rohatgi An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern New Delhi, 1988(3rdEdn)
3. G.G.Roussas, A First Course in Mathematical Statistics, Addison Wesley Publishing Company, 1973.
4. B.L.Van der Waerden, Mathematical Statistics, G.Allen&Unwin Ltd., London, 1968.

Mapping with Programme Outcome

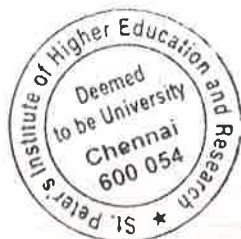
| CO's\PO's\PSO's | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PSO1 | PSO2 |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO1 | - | 2 | 1 | 2 | - | 2 | - | 2 | 1 | 2 |
| CO2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | - | - | 1 |
| CO3 | 1 | 1 | 1 | 2 | 1 | 1 | - | 2 | - | 2 |
| CO4 | - | 2 | 1 | 2 | - | 2 | 1 | - | 1 | 1 |
| CO5 | 1 | 1 | 2 | - | 1 | 2 | - | - | 1 | 2 |

Strong – 3; Medium – 2; Low – 1.

Course Outcomes

On the successful completion of the course, students will be able to


| CO Number | CO Statement | Knowledge Level |
|-----------|--|--------------------|
| CO1 | Understand the basic concept of Distribution functions of X, S^2 , Student t-distribution and Fisher's Z-distribution. | K1, K2, K3, K5 |
| CO2 | To learn the Concept of a statistical test, Kolmogorov Theorem, Tests of Kolmogorov and Smirnov type. | K1, K2, K3, K4, K5 |
| CO3 | Ability to Asymptotically most efficient estimates and its applications. | K1, K2, K3, K4, K5 |
| CO4 | An understanding of Power functions and Uniformly most powerful test, unbiased test. | K1, K2, K3 |
| CO5 | A knowledge of Auxiliary Theorem and Wald's fundamental identity. | K1, K2, K3 |



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Annexure – III

Vedic Mathematics

| | | |
|--|---------------------------|--------------------------------|
|  St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH IGNITE • INSPIRE • INNOVATE | DEPARTMENT RECORDS | DOC.NO.: SPIHER/MM/VACMM033 |
| | DEPARTMENT OF MATHEMATICS | ACADEMIC YEAR: 2018-2019 |

SYLLABUS

Total Hours: 33 Hours

VACMM0033– VEDIC MATHEMATICS

* To make math fun filled and arise interest which in turn will increase the speed and accuracy in various competitive and placement exam.

*VEDIC MATHEMATICS is a better understanding and shortcut methods for solving a problems.

MODULE I:

8

Number Sense for Addition-Mental Maths Addition-Addition with numbers near to 10 or multiple of 10-Left to Right Addition-2 digit-Left to Right Addition – 3 digit-Rapid Addition- Single to Double Digit-Rapid Addition – Double to Double Digit-Rapid Addition – Triple to triple digit-Number Splitting- Trachtenberg- Addition.

MODULE II:

8

Subtraction-Number sense for Subtraction- Warm-ups -Mental Maths Subtraction-Subtraction with Numbers near 10 and multiple of 10-Subtraction Compliments-Subtraction using Nikilam 3 digit, 4 digit, 5 digits-Introduction to Multiplication-Table of 2-25-Mental Maths Multiplication-Simple Multiplication-Introduction to Division-Word Problems on addition, subtraction, multiplication and division.

MODULE III:

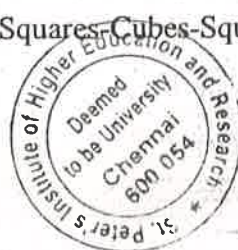
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Multiplication of two digit numbers by 11-Multiplication of three digit numbers by 11- - Multiplication by 12-Multiplication by Thumb Rule-Multiplication of two same digit numbers-Multiplication of numbers using the base 10, 100, 1000-Multiplication of Multiples and Sub multiples- Multiplication of Number series of 9-Multiplication of numbers by Criss-cross Method

MODULE IV:

9

Digital Roots-Divisibility-Fractions-Squares-Cubes-Square Roots-Cube Roots- Division of Double Digit Numbers



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| Course Outcome | |
|----------------|---|
| CO1 | Students learn the shortcut method to solve all the problem. |
| CO2 | Students learn about the different methods of problems solving in Vedic Mathematics |

| Co ur se | PO CO | PO | PO | PO | PO | PO | PO | PO | PO | PO | PO |
|----------------|----------|----|----|----|----|----|----|----|----|----|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| VACMM03 2- | CO1 | - | - | - | - | - | - | - | √ | - | - |
| | CO2 | - | - | - | - | - | - | - | √ | - | - |



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ACTION TAKEN REPORT ON STAKEHOLDERS FEEDBACK ON CURRICULAM DEPARTMENT OF MATHEMATICS ACADAMIC YEAR 2017-2018

Annexure - IV

| Stakeholder | Feedback | Recommendation | Action Taken Report |
|-------------------|---|--|---|
| Student Feedback | Students are highly appreciated the academic related infrastructural facilities like digital library, playground and other facilities. They need more number of hours for using digital library. | Faculty members are asked to encourage the students to spend more time in Digital library even after college timing. | Digital library was already given 1 hr. in academic timetable and advised them to make use of digital library even after their college timings. |
| Faculty Feedback | From the analysis of faculty feedback, it is noticed that they want to improve their training programs and their research activity like conducting conferences and workshop. | Faculty members are asked to attend conferences | Head of the department and the faculty members are decided to organize first National conference and workshops in the academic year 2018. |
| Parents feedback | Parents are very much impressed with university infrastructure and other facilities. | Faculty members are asked to maintain the same | From the analysis of parents feedback shows that overall learning environment in the university is satisfactory. |
| Alumni feedback | Participation in inter college competition has to be improved | Faculty members are asked to arrange the inter college competitions | HOD and Mentos are encouraged and motivated the students to participate in intercollege competitions. |
| Employer feedback | All are satisfied with the present syllabus | Recommended to maintain the same | HOD appreciated the faculty members |

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N. Srinivasan
HOD MATHS



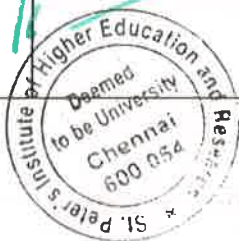
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Website: www.spiher.ac.in

**MINUTES OF THE 07th MEETING OF THE BOARD OF STUDIES IN
MATHEMATICS
HELD ON 14.03.2019**

Members Present

| S. No | Name of the Member | Designation | Member |
|-------|--------------------------------------|--|------------------------------|
| 1. | Dr. N. Srinivasan | Professor & Head, Department of Mathematics, SPIHER | Chairman |
| 2. | Dr. M. Kavitha | Associate Professor, Department of Mathematics, SPIHER | Member |
| 3. | Mrs. S. Cynthiya Margaret Indrani | Assistant Professor, Department of Mathematics, SPIHER | Member |
| 4. | Mrs. D.L. Yamini Latha | Assistant Professor, Department of Mathematics, SPIHER | Member |
| 5. | Mr. M.V. Suresh | Assistant Professor, Department of Mathematics, SPIHER | Member |
| 6. | Dr B. Baskaran | Professor & HOD of Mathematics SRMIST, Vadapalani, Chennai. | Academic Expert Member |
| 7. | Dr. B. J. Balamurugan | Assistant Professor (Senior Grade) School of Advanced Sciences, VIT University, Chennai. | Academic Expert Member |



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MINUTES OF THE 07th MEETING OF THE BOARD OF STUDIES IN

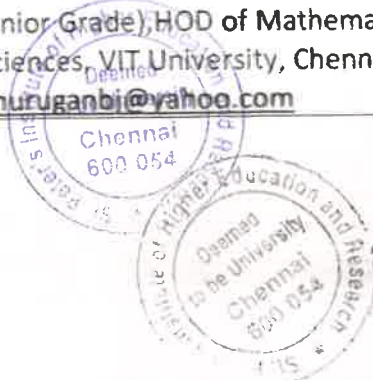
MATHEMATICS

HELD ON 14.03.2019

Members Present

| S.No | Name of the Members & Address | Signature |
|------|---|--------------------------|
| 1 | Dr.N.Srinivasan , M.Sc, M.Phil, Ph.D Professor & Head, Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph-9840252113 | <i>N. Srinivasan</i> |
| 2 | Dr.M.Kavitha , M.Sc, M.Phil, Ph.D Associate Professor, Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph-9940075011 | <i>M. Kavitha</i> |
| 3 | Ms.S.Cynthiya Margaret Indrani , M.Sc, M.Phil Assistant Professor Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph-9840938703 | <i>S. Cynthiya</i> |
| 4 | Ms.D.L.Yaminilatha , M.Sc, M.Phil Assistant Professor Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph- 7358250241 | <i>D.L. Yaminilatha</i> |
| 5 | Mr.M.V.Suresh , M.Sc, B.Ed, M.Phil Assistant Professor Department of Mathematics, St.Peter's Institute Of Higher Education And Research, Avadi, Chennai-54. Ph-8056189677 | <i>M.V. Suresh</i> |
| 6 | Dr. B. Baskaran , M.Sc., M.Phil., Ph.D Professor and HOD of Mathematics, SRMIST, Vadapalani, Chennai. Ph-9444053649, baskaran_40@hotmail.com | <i>B. Baskaran</i> |
| 7 | Dr. B. J. Balamurugan , M.Sc, M.Phil., Ph.D Assistant Professor (Senior Grade), HOD of Mathematics, School of Advanced Sciences, VIT University, Chennai. Ph-9710344355, balamuruganbj@yahoo.com | <i>B. J. Balamurugan</i> |

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7.1 Considered the minutes of the 06th meeting of Board of Studies in mathematics held on 27.08.2018.

RESOLVED that the minutes of the 06th meeting of Board of Studies in Mathematics held on 27.08.2018 be confirmed.

7.2 Reviewed the Regulation & Syllabi of B.Sc. Mathematics programme and curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2016 with Choice Based Credit System (CBCS).

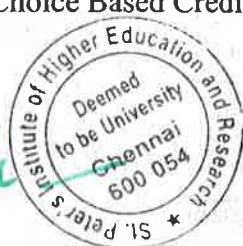
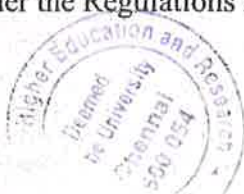
RESOLVED that the Syllabi of B.Sc. Mathematics programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued.

7.3 Reviewed the syllabi of Mathematics paper for BCA, B.Com., B.Sc., (Physics, Chemistry & Computer Science) under Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the syllabi of Mathematics paper for BCA, B.Com, B.Sc (Physics, Chemistry & Computer Science) under Regulations 2016 with Choice Based Credit System(CBCS) be continued.

7.4 Reviewed the Regulation & syllabi of M. Sc (Mathematics) and curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Syllabi of M.Sc. Mathematics programme under the Regulations 2016 with Choice Based Credit System(CBCS) be continued having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2016 with Choice Based Credit System (CBCS) be continued



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7.5 Reviewed the syllabi of Mathematics for MBA (Statistics for Management and Applied Operations Research) under Regulations 2016 with Choice Based Credit System (CBCS).
RESOLVED that the syllabi of Mathematics for MBA (Statistics for Management and Applied Operations Research) under Regulations 2016 with Choice Based Credit System (CBCS) be continued.

7.6 Reviewed the syllabi of Mathematics prescribed for Engineering and Technology UG Programmes under Regulation 2018 with Choice Based Credit System (CBCS).
RESOLVED that the Syllabi of Mathematics prescribed for Engineering and Technology UG Programmes under Regulation 2018 with Choice Based Credit System (CBCS) be continued.

7.7 Reviewed the syllabi of Mathematics prescribed for Engineering and Technology PG Programmes (ME/M.Tech) under Regulation 2018 with Choice Based Credit System (CBCS).
RESOLVED that the syllabi of Mathematics prescribed for Engineering and Technology PG Programmes (ME/M.Tech) under Regulation 2018 be continued.

7.8 Reviewed the Regulation & syllabi of M. Phil (Mathematics) and curricula developed having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2019 with Choice Based Credit System (CBCS).

RESOLVED that the Syllabi of M.Phil Mathematics programme under the Regulations 2019 with Choice Based Credit System(CBCS) be continued having relevance to the local/national/regional/global developmental needs with learning objectives including program out comes, program specific outcomes and course outcomes of all the programmes under the Regulations 2019 Choice Based Credit System with inclusion of electives (CBCS)

- (i) 119MMA03 Applied mathematics
- (i) 119MMA04 Mathematical Programming
- (ii) 119MMA05 Number Theory and Cryptography be continued.

(Annexure-I)



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7.9 Considered the skill development courses in professional domains and branch specific areas to promote employment and competency among learners/necessary certification courses/Internship training.

Resolved that the skill development courses in professional domains and branch specific areas to promote employment and competency among learners/necessary certification courses/Internship training be continued. Value added courses to be conducted on

(i) R- Software in Mathematics

With course duration of 33 hours for developing their skills

(Annexure – II)

Date: 14.03.2019

N. Srinivasan
Chairman



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Annexure – I
St. Peter's Institute of Higher Education and Research
AVADI, Chennai -600 054
M.Phil. Mathematics

| 119MMA03 | Applied Mathematics | L | T | P | C | Total Marks |
|----------|---------------------|---|---|---|---|-------------|
| | | 4 | 1 | 0 | 5 | 100 |

Prerequisites: None

COURSE OBJECTIVES:

- To find the solution of the polynomial equations both in explicit term and in-terms of abstract algebraic structures
- To apply the concepts of matrix in solving a system of linear equations
- To be exposed to basic concepts of theory of numbers.

Unit-I:- [Decision theory and Simulation]

Decision making Environments – Decision making under certainty- Decision making under risk – Decision trees- Advantages of simulation technique- Limitations of Simulation technique – Monte Carlo method – Generation of random numbers.

(15)

Unit – I:- [Queueing Models]

Characteristics of Queueing models – Transient and steady states of system –Single server models – Multi server models – Birth & Death process – Monte Carlo technique applied to queueing problems - $(M/E_k/1 : FCFS/\infty)$ model.

(15)

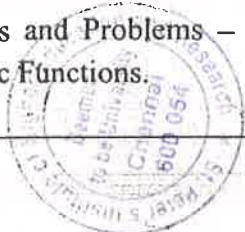
Unit –III:- [Mathematical models of fluid motion]

Real fluid - Ideal fluids – Equation of continuity – Euler's equation of motion – Bernoulli's equation (frictionless flow) – Viscous flow-Stress and Strain rate relationships in fluids- Momentum equation – Navier's stokes equation – Exact solutions.

(15)

Unit – IV:- [Probability Theory]

Convergence in probability – Convergence Almost surely – Convergence in Distribution – Convergence in r^{th} mean – Convergence theorems for Expectations – Fubini's Theorem – Complements and Problems – Weak convergence – Convergence of Distribution Functions and Characteristic Functions.



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Unit – V :- [Graph Theory]

Introduction – Algorithmic Complexity – Data Structures and Depth – First Searching – Spanning Trees – Branching and Connectivity optimum weight spanning trees - Optimum Branching's – Enumeration of spanning trees – Circuits – Cut sets and Connectivity – Fundamental Circuit of a graph – Connectivity.

(15)

TOTAL HOURS: 75

COURSE OUTCOMES:

At the end of this course, students will be able to:

CO 1: Apply the knowledge of decision theory in practical life

CO 2: Understand how Queuing model is helpful in real life applications
Aptitude.

CO 3: To understand Euler's equation of motions.

CO 4: To understand probability Theory

CO 5: Understand fundamental circuits of graph connectivity.

Reference Books:

1. Operations Research, Prem Kumar Gupta and D.S Hira,
S.Chand and company Ltd,.. First Edition
2. Introduction to Operations Research ,Taha
3. Fluid Dynamics , FCharlton
CBS Publishers & Distributors
4. Theory and Problems of Fluid Dynamics –Schaum's Outline Series.
5. Boundary Layer Theory , H.Schlichting
McGraw Hill publishing .Co,..
6. Graph Theory ,A.M.Gibbons.

Mapping with Programme Outcomes

| CO's\PO's\PSO's | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PSO1 | PSO2 | PSO3 |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | 2 | 2 | - | - | 2 | 2 | 2 | - | 1 | 2 | 2 |
| CO2 | 2 | 2 | 2 | - | 2 | 2 | 1 | 1 | - | 2 | 2 |
| CO3 | 2 | 2 | - | - | 2 | 1 | 1 | 2 | - | 2 | 2 |
| CO4 | - | 2 | 2 | - | 1 | - | 2 | - | - | 1 | 1 |

Strong – 3; Medium – 2; Low – 1.




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Course Outcomes

On the successful completion of the course, students will be able to

| CO Number | CO Statement | Knowledge Level |
|-----------|---|-----------------|
| CO1 | Apply the knowledge of polynomial equations, irrational roots, Symmetric roots. | K1, K2 ,K3, K5 |
| CO2 | Develop the skills in roots of the equations and summation of series. | K1,K2,K3,K4,K5 |
| CO3 | Define and work with concepts of various types of matrices. | K1,K2,K3.K4,K5 |
| CO4 | Apply the knowledge of real numbers, their operations an basic properties. | K1,K2,K3 |




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| 119MMA04 | MATHEMATICAL PROGRAMMING | L | T | P | C | Total Marks |
|----------|--------------------------|---|---|---|---|-------------|
| | | 4 | 1 | 0 | 5 | 100 |

Prerequisites: None

COURSE OBJECTIVES:

This course is designed to understand how to formulate integer programming and solving it also it describe important dynamic technology and develop programming stages. Students will also learn advanced topics in Linear and non-linear Programming

UNIT-I: Integer Linear Programming

15

Types of Integer Linear Programming Problems – Concept of Cutting Plane – Gomary’s all Integer Cutting Plane Method – Gomary’s mixed Integer Cutting Plane method – Branch and Bound Method.

UNIT-II: Dynamic Programming

15

Characteristics of Dynamic Programming Problem – Developing Optimal Decision Policy – Dynamic Programming Under Certainty – DP approach to solve LPP.

UNIT-III: Classical Optimization Methods

15

Unconstrained Optimization – Constrained Multi-variable Optimization with Equality Constraints - Constrained Multi-variable Optimization with inequality Constraints

Non-linear Programming Methods: Examples of NLPP – General NLPP – Graphical solution – Quadratic Programming – Wolfe’s modified Simplex Methods

UNIT-IV: Linear Programming Problem

15

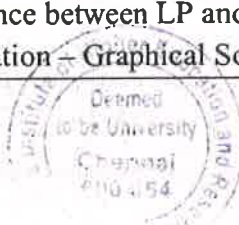
Simple problems.

Parametric Linear Programming: Variation in the coefficients c_j , Variations in the Right hand side, b_i .

UNIT-V: Goal Programming

15

Difference between LP and GP approach – Concept of Goal Programming – Goal Programming Model formulation – Graphical Solution Method of Goal Programming – Modified Simplex method of Goal



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Programming.

TOTAL HOURS :75

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO 1: Know the formulation of IPP and solving the problems.

CO 2: Understand the concepts of dynamic programming and they can develop programming stages.

CO 3: Identify the constrained multi variable optimization with equality and inequality constraints.

CO 4: Analyse the concepts of Linear Programming problem and also they know how to apply LPP in Parametric Programming.

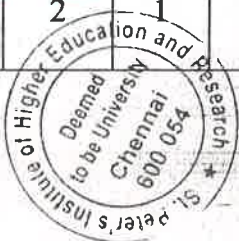
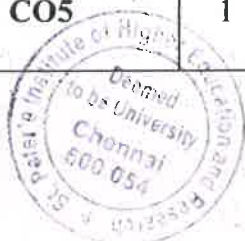
CO 5: Differentiate between Linear Programming and Goal Programming

REFERENCE BOOKS:

1. J.K.Sharma, Operations Research , Macmillan (India) New Delhi 2001.
2. Hamdy A. Taha, Operations Research, (seventh edition) Prentice - Hall of India Private Limited, New Delhi, 2005.
3. F.S. Hiller & J.Lieberman, Introduction to Operation Research (7th Edition) Tata- McGraw Hill Company, New Delhi, 2001.
4. Beightler. C, D.Phillips, B. Wilde, Foundations of Optimization (3rd Edition) Prentice Hall Pvt Ltd., New York, 2009.
5. S.S. Rao - Optimization Theory and Applications, Wiley Eastern Ltd. New Delhi. 2010.

Mapping with Programme Outcomes

| CO's\PO's\PSO's | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PSO1 | PSO2 |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO1 | 2 | 2 | 1 | 1 | 2 | 1 | - | 2 | 1 | 2 |
| CO2 | 1 | 2 | 2 | - | 1 | 2 | 2 | - | 2 | 2 |
| CO3 | 1 | 1 | 2 | 2 | 1 | 2 | - | 2 | 2 | 2 |
| CO4 | 2 | - | - | 1 | 2 | - | - | - | 2 | 2 |
| CO5 | 1 | 2 | 2 | 1 | 2 | 2 | - | 1 | 1 | 2 |



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| | | | | | | |
|----------|-----------------------------------|---|---|---|---|-------------|
| 119MMA05 | NUMBER THEORY AND CRYPTOGRAPHY | L | T | P | C | Total Marks |
| | | 4 | 1 | 0 | 5 | 100 |

Prerequisites: None

COURSE OBJECTIVES:

➤ This course aims to give elementary ideas from number theory which will have applications in cryptology.

UNIT-I : **15**

Divisibility and Euclidean algorithm – Congruence, Euler’s Theorem, Wilson’s Theorem, Chinese Remainder Theorem, Primitive roots - Applications to Factoring.

UNIT-II: **15**

Finite Fields – Quadratic Residues – Quadratic Reciprocity – The Jacobi symbol.

UNIT-III: **15**

Cryptosystems – Enciphering Matrices – Public Key Cryptography – Concepts of Public Key Cryptography – Modular Arithmetic – RSA.

UNIT-IV: **15**

Pseudo primes and Strong Pseudo primes – The rho method – Fermat factorization and factor bases and Algorithm – The Continued fraction method and Algorithm.

UNIT-V: **15**

Primality, Factoring, Elliptic curves – Basic Facts and Elliptic curve crypto systems.

TOTAL HOURS : 75

COURSE OUTCOMES:

On the successful completion of the course, students will be able to

CO 1: Understand the basic concept of Euclidean algorithm and its applications.

CO 2: Introduction to Classical Crypto systems and Enciphering matrices.

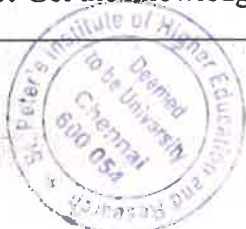
CO 3: To get the knowledge of Finite Field.

CO 4: To learn about the Public Key Cryptography.

CO 5: Get the knowledge of Elliptic curve

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REFERENCE BOOKS:

1. Neal Koblitz, A Course in Number Theory and Cryptography, Springer-Verlag, New York, 2004.
2. I.Niven and H.S.Zuckermann, An Introduction to Theory of Numbers (Edn. 3), Wiley Eastern Ltd., New Delhi, 2006
3. David M.Burton, Elementary Number Theory, Brown Publishers, Iowa, 2009
4. K.Ireland and M.Rosen, A Classical Introduction to Modern Number Theory, Springer Verlag, 2002
5. N.Koblitz, Algebraic Aspects of Cryptography, Springer 2008.

Mapping with Programme Outcomes

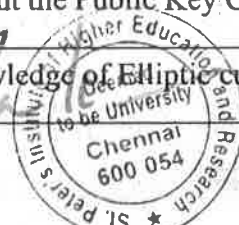
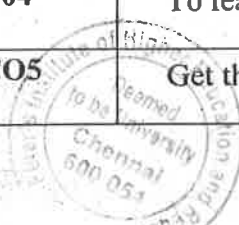
| CO's/PO's/PSO's | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PSO1 | PSO2 |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|
| CO1 | 2 | 2 | 1 | 2 | 2 | 1 | - | 2 | 1 | 1 |
| CO2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | - | 1 | - |
| CO3 | 1 | 1 | 2 | 2 | 1 | 2 | - | 2 | 1 | 2 |
| CO4 | 2 | 2 | 2 | 2 | 2 | 2 | - | - | 2 | - |
| CO5 | - | 1 | 2 | 1 | 2 | 2 | - | 1 | - | 2 |

Strong – 3; Medium – 2; Low – 1.

Course Outcomes


On the successful completion of the course, students will be able to

| CO Number | CO Statement | Knowledge Level |
|-----------|---|-----------------|
| CO1 | Understand the basic concept of Euclidean algorithm and its applications. | K1, K2, K3 |
| CO2 | Introduction to Classical Crypto systems and Enciphering matrices. | K1, K2, K3 |
| CO3 | To get the knowledge of Finite Field. | K1, K2, K3. |
| CO4 | To learn about the Public Key Cryptography. | K1, K2, K3 |
| CO5 | Get the knowledge of Elliptic curve. | K1, K2, K3 |



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Annexure – II
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| | | |
|--|--|---------------------------------------|
|  St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH IGNITE • INSPIRE • INNOVATE | DEPARTMENT RECORDS | DOC.NO.: SPIHER/MM/VACMM034 |
| | DEPARTMENT OF MATHEMATICS | DATE : 26.06.2019 |
| | | PAGE :1 OF1 |
| | | ACADEMIC YEAR: 2019-2020 |
| SYLLABUS | | |

Total Hours: 33 Hours

VACMM034– R – SOFTWARE IN MATHEMATICS

Course Objectives:

- To Impart the Knowledge to the students with R-software.4
- To Expose students on the applications of Statistical Model Building using R-Programming.
- To develop statistical model building skills through analyzing real life problems Basics of R.

UNIT I: Introduction to R-Software.

6

An Introduction and Fundamentals of R – How to run R-R as a calculator- Data Types – Advanced Data Structures – Data Frames- Data entry and exporting data.

UNIT II: Linear and Matrix Algebra.

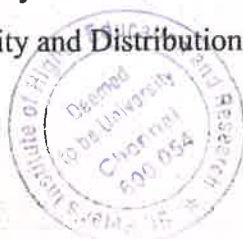
8

Loops and Conditional Execution – Linear Algebra Operation on Vectors and Matrices – Linear Dependency and Linear Independency - Determining Matrix Determinant and Matrix Inverse – Looping Over Non-vector sets , Matrices , Arrays , Classes , Arithmetic , and Boolean Operators.

UNIT III: Exploratory data analysis with R-Software.

6

Summary Statistics – Measures of Central tendency – Measures of Variation – Graphics in R- Probability and Distribution.



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UNIT IV: Regression and correlation.

6

Simple regression and correlation – Regression coefficients- Multiple Regression – Regression diagnostics.

UNIT V: Classical tests:

7

T-Tests – One – sample tests – Two –sample tests- Tests on more than two samples – ANOVA.

| Course Outcomes | | RBT |
|-----------------|---|---------|
| CO1 | Comprehended the basic knowledges about R-Software | K2,K6 |
| CO2 | Access online resources for R and import new function packages in to the R workspace. | K4 , K6 |

| Course | PO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO 6 | PO7 | PO8 | PO9 | PO10 |
|--------|----------|--|-----|-----|-----|-----|------|-----|-----|-----|------|
| | | VACMM034- R- SOFTWAREI N MATHEMATI CS | CO1 | - | - | - | - | - | - | - | √ |
| | CO2 | - | - | - | - | - | - | - | √ | - | - |



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Website:www.spiher.ac.in

NEW COURSES FOR THE ACADEMIC YEAR 2019-2020

B.Sc. – MATHEMATICS

| S.No | Programme Code | Programme Name | Course Code | Name of the Course |
|------|----------------|---------------------|-------------|-------------------------|
| 1 | MAU | B.Sc. - Mathematics | 616UMMT06 | OPERATIONS RESEARCH |
| 2 | MAU | B.Sc. - Mathematics | 318UEHT02 | ENGLISH –III |
| 3 | MAU | B.Sc. - Mathematics | 616UMMT04 | ELEMENTRY NUMBER THEORY |
| 4 | MAU | B.Sc. - Mathematics | 516UMMT06 | MATHEMATICAL MODELLING |

N. Smita

HEAD

DEPARTMENT OF MATHS
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Phone:044-26558080-84
E-mail:registrar@spiher.ac.in
Website:www.spiher.ac.in

NEW COURSES FOR THE ACADEMIC YEAR 2019-2020

M.Sc. – MATHEMATICS

| S.No | Programme Code | Programme Name | Course Code | Name of the Course |
|------|----------------|---------------------|-------------|-------------------------|
| 1 | MAP | M.Sc. - Mathematics | 416PMMT06 | MATHEMATICAL STATISTICS |

N. Srinivasan

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DEPARTMENT OF MATHS

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MINUTES OF THE 5th MEETING OF THE BOARD OF STUDIES IN

MICROBIOLOGY

Held on 17.09.2018

Members Present

| S. No | Name | Designation | Member | Signature |
|-------|----------------------|--|-----------------|---|
| 1 | Dr GANESAN N | Professor & Head | Chairman |  |
| 2 | Dr. K. Geetha | Assistant Professor | Internal Member |  |
| 3 | Mr. Anandanbararsu | Assistant Professor | Internal Member |  |
| 4 | Dr. A. Suresh Kumar | Scientist, Microbiology & Biotech Division, CSIR - CLRI, Chennai | External Member |  |
| 5 | Dr. Balu Ranganathan | Director, M/S Palmsconnect Solution Pvt. Ltd, Chennai | External Member |  |



Chairman

Professor and Head
Department of Microbiology
St. Peter's Institute of Higher Education & Research
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5.1 Considered the minutes of the 4th meeting of Board of Studies in Microbiology held on 12.02.2018.

RESOLVED that the minutes of the 4th meeting of Board of Studies in Microbiology held on 12.02.2018 be confirmed

5.2 Reviewed the Regulation and Syllabi of B.Sc. (Microbiology) under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Syllabi of III to IV semester of B.Sc. (Microbiology) under the Regulations 2016 with Choice Based Credit System (CBCS) from the batch of students to be admitted from 2018-19 to be continued

5.3 Reviewed the Regulation and Syllabi of M.Sc. (Microbiology) under the Regulations 2016 with Choice Based Credit System (CBCS).

RESOLVED that the Syllabi of I to IV semester of M.Sc. (Microbiology) under the Regulations 2016 with Choice Based Credit System (CBCS) from the batch of students to be admitted from 2018-19 to be continued

5.4 Considered to include courses having focus on employability/ entrepreneurship /skill development in the syllabi of B.Sc (Microbiology) under the Regulations 2016 and M.Sc


Registrar

(Microbiology) under the Regulations 2016.

RESOLVED that the courses having focus on employability/ entrepreneurship /skill development year wise in the syllabi of B.Sc (Microbiology) under the Regulations 2016 & M.Sc (Microbiology) under the Regulations 2016 to be approved.

Date: 17.09.2018



Chairman

Professor and Head
Department of Microbiology
St. Peter's Institute of Higher Education & Research
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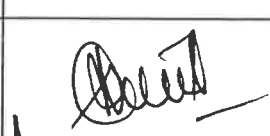





2018-19

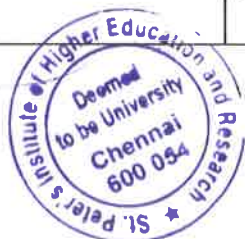
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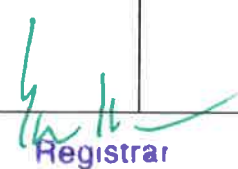
**MINUTES OF THE 6th MEETING OF THE BOARD OF STUDIES IN
PHYSICS**

Held on 27th August, 2018


Members Present

| S. No | Name of the Member | Designation | Member | Signature |
|-------|---|---|---------------------------|---|
| 1. | Dr. S. Stella Mary | Professor & Head Department of Physics SPIHER | Chairperson |  |
| 2. | Dr. S. Gunasekaran | Professor Department of Physics SPIHER | Member |  |
| 3. | Dr. M. Mohamed Hidayatullah | Professor Department of Physics SPIHER | Member |  |
| 4. | Mrs. R. Ramalakshmi | Assistant Professor Department of Physics SPIHER | Member |  |
| 5. | Dr G. Anbalagan | Professor Department of Nuclear Physics University of Madras, Guindy Chennai | Academic Expert Member |  |
| 6. | Mr. S. L. Balaji | Mr. S. L. Balaji Mobtron Enterprizes, Kilpauk Chennai | Industry Expert Member |  |




Registrar

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Avadi, Chennai-600 054


Dr. S. STELLA MARY, M.Sc., M.Phil., Ph.D.
Professor & Head, (Research Supervisor)
Department of Physics

| | |
|-----|---|
| 6.1 | Considered the minutes of the 5 th meeting of Board of Studies in Physics held on 15.03.2018. RESOLVED that the minutes of the 5 th meeting of Board of Studies in Physics held on 15.03.2018 be confirmed. |
| 6.2 | Reviewed Syllabi of Engineering Physics prescribed for Engineering and Technology programmes under the Regulations 2013, 2015 and 2017. RESOLVED that the Syllabi of Engineering Physics prescribed for Engineering and Technology programmes under the Regulations 2013 2015 and 2017 be continued. |
| 6.3 | Reviewed Syllabi of Engineering Physics prescribed for Engineering and Technology programmes under the Regulations 2018. RESOLVED that the Syllabi of Engineering Physics prescribed for Engineering and Technology programmes under the Regulations 2018 be continued. |
| 6.3 | Reviewed the Regulation & Syllabi of V & VI Semester of B.Sc Physics programme under the Regulations 2016. RESOLVED that the Regulation & Syllabi of V & VI Semester of B.Sc Physics programme under the Regulations 2016 be continued with the addition of new courses be continued. (Appendix I) |
| 6.4 | Reviewed the Syllabi of Allied Physics I and II prescribed for B,Sc Computer Science, Mathematics and Chemistry programme under the Regulations 2016. RESOLVED that the Syllabi of Allied Physics I and II prescribed for B,Sc Computer Science, Mathematics and Chemistry programme under the Regulations 2016 be continued. |
| 6.5 | Reviewed the Regulation & Syllabi of II & III Semester of M.Sc Physics programme under the Regulations 2018. RESOLVED that the Regulation & Syllabi of II & III Semester of M.Sc Physics programme under the Regulations 2018 be approved. (Appendix II) |
| 6.6 | Reviewed and considered the curriculum feedback analysis and action taken report collected from stake holders NOTED the curriculum feedback analysis and action taken report collected from stake holders be included in the appropriate place in the syllabi. (Appendix III) |

Date: 27.08.2018




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Chairperson

Dr. S. STELLA MARY, M.Sc., M.Phil., Ph.D.,
Professor & Head, (Research Supervisor)
Department of Physics
St. Peter's Institute of Higher Education and Research
Avadi, Chennai - 600 054.

(Appendix I)

V Semester

| Code No. | Course Title | Credit | Marks | | |
|------------------|--|-----------|------------|------------|------------|
| | | | CA | EA | Total |
| 516UPHT01 | Electricity & Electromagnetism | 5 | 25 | 75 | 100 |
| 516UPHT02 | Core Sub: Nuclear Physics and Particle Physics | 5 | 25 | 75 | 100 |
| 516UPHT03 | | 5 | 25 | 75 | 100 |
| 516UPHT05 | Elective I | 4 | 25 | 75 | 100 |
| 516UPHP01 | Core Paper - Practical -V (2 Hrs per week) | 2 | 40 | 60 | 100 |
| 516UPHP02 | Core Paper - Practical-VI (2 Hrs per week) | 2 | 40 | 60 | 100 |
| 516UPHP03 | Core Paper - Practical-VII (2 Hrs per week) | 2 | 40 | 60 | 100 |
| 516UVET01 | Part IV : Value Education (Common to all UG Branches) | 2 | 25 | 75 | 100 |
| Total | | 27 | 245 | 555 | 800 |

VI Semester

| Code No. | Course Title | Credit | Marks | | |
|------------------|---|-----------|------------|------------|------------|
| | | | CA | EA | Total |
| 616UPHT01 | Core Sub: Relativity and Quantum Mechanics | 5 | 25 | 75 | 100 |
| 616UPHT02 | | 5 | 25 | 75 | 100 |
| 616UPHP01 | | 2 | 40 | 60 | 100 |
| 616UPHP02 | | 2 | 40 | 60 | 100 |
| 616UPHP03 | | 2 | 40 | 60 | 100 |
| 616UPHT03 | Elective II | 4 | 25 | 75 | 100 |
| 616UPHT04 | Elective III | 4 | 25 | 75 | 100 |
| 616UEAT01 | Part IV : Extension Activity (Common to all UG Branches) | 1 | - | - | - |
| Total | | 25 | 220 | 480 | 700 |




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(Appendix II)

St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH
M.Sc. (PHYSICS) PROGRAMME-Regulation 2018
REGULATIONS AND SYLLABI UNDER CHOICE BASED CREDIT SYSTEM
(Effective from the Academic Year 2018-2019)

III Semester

| Code No. | Course Title | Credit | Marks | | |
|------------------|--|-----------|------------|------------|------------|
| | | | CA | EA | Total |
| Theory | | | | | |
| 318PMPT01 | Electromagnetic Theory & Plasma Physics | 4 | 25 | 75 | 100 |
| 318PMPT02 | Nuclear & Particle Physics | 4 | 25 | 75 | 100 |
| 318PMPT03 | Computational Methods & Programming | 4 | 25 | 75 | 100 |
| 318PMPE01 | Elective III | 3 | 25 | 75 | 100 |
| 318PMPE02 | Elective- IV | 3 | 25 | 75 | 100 |
| 318PMST03 | Soft skills III | 2 | 40 | 60 | 100 |
| Practical | | | | | |
| 318PMPP01 | Advanced Physics and Computational Methods | 3 | 25 | 75 | 100 |
| 318PMPI01 | Internship | 2 | - | - | - |
| TOTAL | | 25 | 190 | 510 | 700 |

IV Semester

| Code No. | Course Title | Credit | Marks | | |
|------------------|--------------------------------------|-----------|------------|------------|------------|
| | | | CA | EA | Total |
| Theory | | | | | |
| 418PMPT01 | Condensed Matter Physics | 4 | 25 | 75 | 100 |
| 418PMPE01 | Elective V | 3 | 25 | 75 | 100 |
| 418PMPE02 | Elective VI | 3 | 25 | 75 | 100 |
| Practical | | | | | |
| 418PMPP01 | Advanced Physics and Microcontroller | 3 | 25 | 75 | 100 |
| 418PMPP02 | Project | 4+4 | 25 | 65 | 100 |
| | Viva Voce | | | 10 | |
| TOTAL | | 21 | 125 | 375 | 500 |



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List of Electives

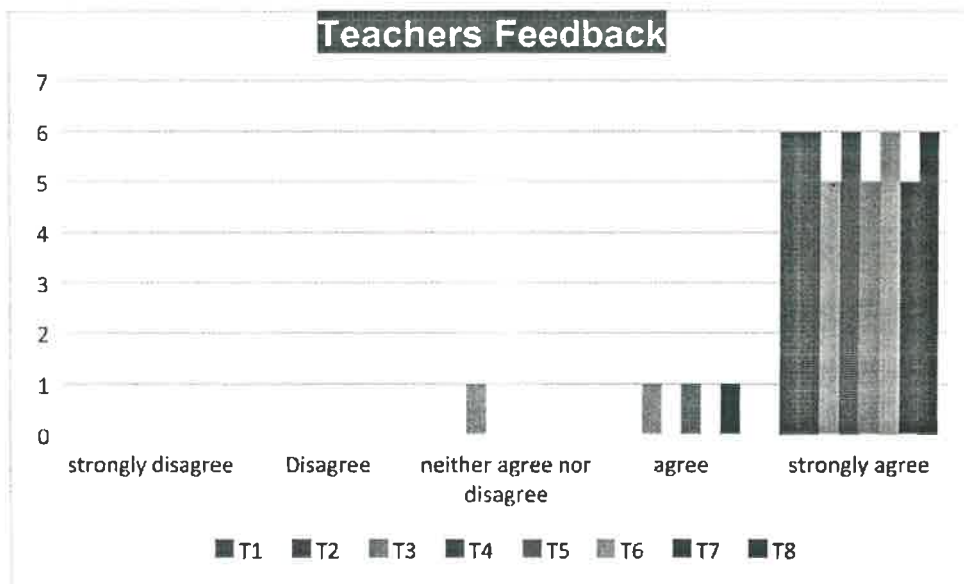
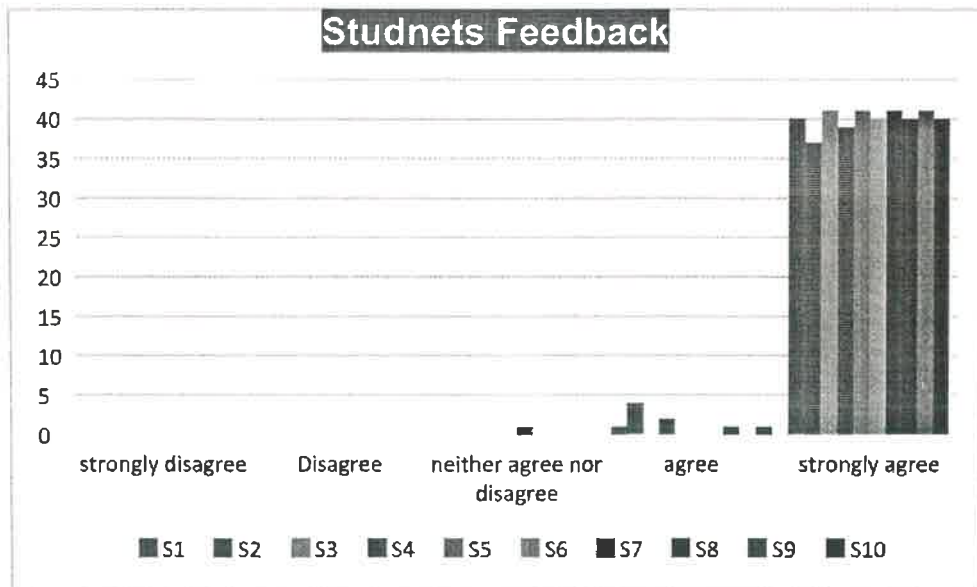
| S.No. | Code No. | Subject | Credit |
|-------|-----------|---|--------|
| 1. | 218PMPE01 | Medical Physics | 3 |
| 2. | 218PMPE02 | Crystal growth and Characterization | 3 |
| 3. | 218PMPE03 | Non- linear Dynamics | 3 |
| 4. | 318PMPE01 | Laser Physics and Application | 3 |
| 5. | 318PMPE02 | 8051 Micro controller & Integrated Techniques | 3 |
| 6. | 318PMPE03 | Bio materials Science | 3 |
| 7. | 318PMPE04 | Fibre Optics | 3 |
| 8. | 418PMPE01 | Molecular Biophysics | 3 |
| 9. | 418PMPE02 | Nano Science | 3 |
| 10. | 418PMPE03 | Instrumental Methods of Analysis | 3 |
| 11. | 418PMPE04 | Energy Physics | 3 |
| | 418PMPE05 | Electronics in Daily Life science | 3 |

Overall percentage change: 50



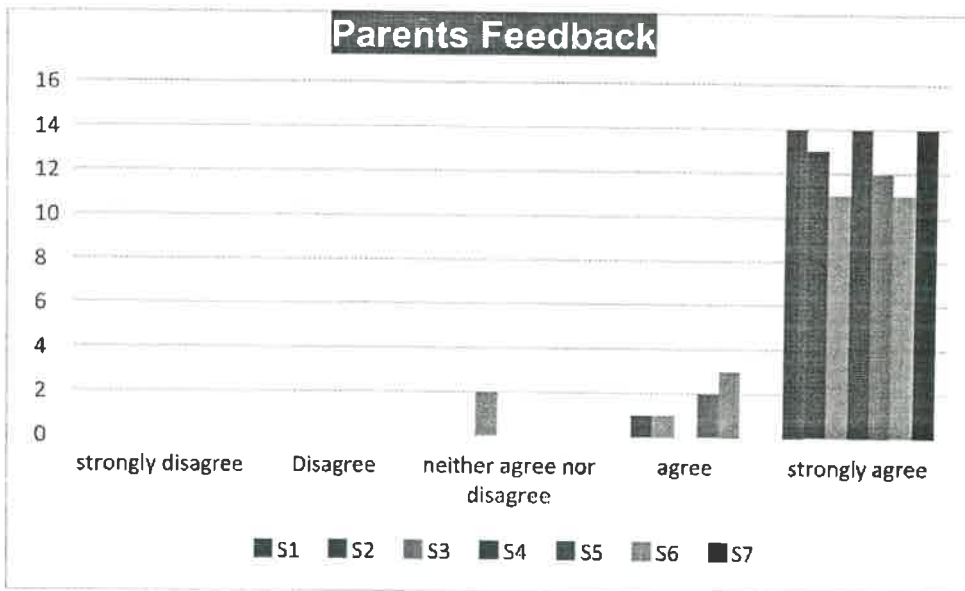
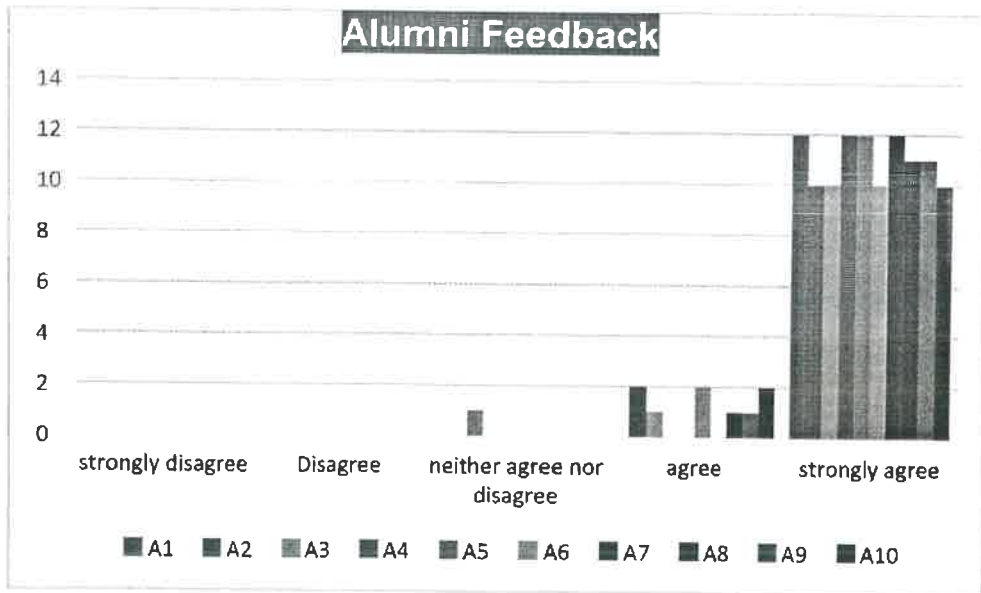

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ACTION TAKEN REPORT ON FEEDBACK COLLECTED FROM STAKE HOLDERS




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St.PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH
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AVADI, Chennai – 600054.TamilNadu.

Phone:044-26558080-84
E-mail:registrar@spiher.ac.in
Website:www.spiher.ac.in

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NEW COURSES FOR THE ACADEMIC YEAR 2019-2020

B.Sc. - PHYSICS

| S.No | Programme Code | Programme Name | Course Code | Name of the Course |
|------|----------------|-----------------|-------------|--------------------------------------|
| 1 | PHU | B.Sc. - Physics | 516UPHT01 | ELECTRICITY & ELECTROMAGNETISM |
| 2 | PHU | B.Sc. - Physics | 516UPHT02 | NUCLEAR PHYSICS AND PARTICLE PHYSICS |
| 3 | PHU | B.Sc. - Physics | 516UPHT03 | SOLID STATE PHYSICS |
| 4 | PHU | B.Sc. - Physics | 516UPHT05 | NUMERICAL METHODS |
| 5 | PHU | B.Sc. - Physics | 516UPHP01 | PRACTICAL V |
| 6 | PHU | B.Sc. - Physics | 516UPHP02 | PRACTICAL VI |
| 7 | PHU | B.Sc. - Physics | 516UPHP03 | PRACTICAL VII |
| 8 | PHU | B.Sc. - Physics | 616UPHT01 | RELATIVITY AND QUANTUM MECHANICS |
| 9 | PHU | B.Sc. - Physics | 616UPHT02 | MATHEMATICAL METHODS IN PHYSICS |
| 10 | PHU | B.Sc. - Physics | 616UPHT03 | INTEGRATED ELECTRONICS |
| 11 | PHU | B.Sc. - Physics | 616UPHP01 | PRACTICAL VIII |
| 12 | PHU | B.Sc. - Physics | 616UPHP02 | PRACTICAL IX |
| 13 | PHU | B.Sc. - Physics | 616UPHP03 | PRACTICAL X |
| 14 | PHU | B.Sc. - Physics | 616UPHT04 | MICROPROCESSOR FUNDAMENTALS |
| 15 | PHU | B.Sc. - Physics | 519UPHT05 | SOLAR ENERGY AND ITS UTILIZATION |



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Phone:044-26558080-84
E-mail:registrar@spiher.ac.in
Website:www.spiher.ac.in

IGNITE • INSPIRE • INNOVATE

NEW COURSES FOR THE ACADEMIC YEAR 2019-2020

M.Sc. – PHYSICS

| S.No | Programme Code | Programme Name | Course Code | Name of the Course |
|------|----------------|-----------------|-------------|---|
| 1 | PHP | M.Sc. - Physics | 319PMPE05 | MATERIALS PHYSICS & PROCESSING TECHNIQUES |
| 2 | PHP | M.Sc. - Physics | 419PMPE05 | MODERN OPTICS |



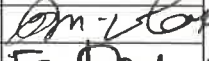



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AVADI, CHENNAI – 600 054.

**MINUTES OF THE 1st MEETING OF THE BOARD OF STUDIES IN
TAMIL**

Held on 27th August 2018

| S.NO | NAME | DESIGNATION | MEMBER | SIGNATURE |
|------|------------------|---|-----------------|---|
| 1 | Dr. R.Premalatha | Professor & Head | Chairperson |  |
| 2 | K. Jayaseelan | Assistant Professor | Internal Member |  |
| 3 | M.Ravichandran | Assistant Professor | Internal Member |  |
| 4 | Dr.G.Palani | Associate Professor Department of Tamil literature University of Madras | External Member |  |

| | |
|-----|---|
| 1.1 | Preview of the Regulations & Syllabi of B.A. Tamil programme under the Regulations 2018. RESOLVED that the Regulations & Syllabi of B.A. Tamil programme under the Regulations 2018 be confirmed. |
| 1.2 | Preview of the Regulations & Syllabi of III & IV Semester of Tamil programme under the Regulations 2018 with Choice Based Credit System (CBCS). RESOLVED that the Regulations & Syllabi of III & IV Semester of Tamil programme under the Regulations 2018 with Choice Based Credit System (CBCS) be continued(Appendix-I) |
| 1.3 | Considered the Syllabi of TAMIL as prescribed for B.A/B.sc/B.Com/B.B.A/ B.C.A Under part I effective from 2018 - 19 RESOLVED that the Syllabi of TAMIL as prescribed for B.A/B.sc/B.Com/B.B.A/ B.C.A Under part I effective from 2018 – 19 be approved |

Date: 27.08.2018



Chairperson

இரா. பிரேமலதா பூபேஷ்

தமிழ்த்துறைத் தலைவர்

மகிழ்வு மீட்டர் உயர்க்கல்வி மற்றும் ஆராய்ச்சி நிறுவனம்
ஆவடி, சென்னை - 600 054.




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Appendix 1

St. PETER'S INSTITUTE OF HIGHER EDUCATION AND RESEARCH
(Deemed to be University U/S 3 of the UGC Act, 1956)
AVADI, CHENNAI – 600 054.

III Semester

| Code No. | Course Title | Credit | Marks | | |
|--------------|--|-----------|------------|------------|------------|
| | | | CA | EA | Total |
| 318UTMT01 | Part I:Language - III (Tamil - III) | 3 | 25 | 75 | 100 |
| 318UEHT02 | Part II: English – III | 3 | 25 | 75 | 100 |
| 318UTAT03 | Part – III: Core Subject: நம்பியகப்பொருள் | 6 | 25 | 75 | 100 |
| 318UTAT04 | சமயப்பாடல்களும் சிற்றிலக்கியங்களும் | 6 | 25 | 75 | 100 |
| 318UTAT05 | Allied Paper III: தமிழ் இலக்கிய வரலாறு – I | 5 | 25 | 75 | 100 |
| 318UCCT03 | Soft Skills – II (common to all UG branches) | 2 | 50 | 50 | 100 |
| Total | | 25 | 175 | 425 | 600 |

IV Semester

| Code No. | Course Title | Credit | Marks | | |
|--------------|---|-----------|------------|------------|------------|
| | | | CA | EA | Total |
| 416UTMT01 | Part I:Language –IV (Tamil - IV) | 3 | 25 | 75 | 100 |
| 416UEHT02 | Part II: English – IV | 3 | 25 | 75 | 100 |
| 416UTAT03 | Part – III: Core Subject: புறப்பொருள் வெண்பாமாலை | 5 | 25 | 75 | 100 |
| 416UTAT04 | காப்பியங்கள் | 5 | 25 | 75 | 100 |
| 416UTAT05 | Allied Paper – IV: தமிழ் இலக்கிய வரலாறு – II | 5 | 25 | 75 | 100 |
| 418UEST01 | சுற்றுச்சூழல்கல்வி | 2 | 25 | 75 | 100 |
| 418UCCT04 | Soft Skills – III(common to all UG branches) | 2 | 50 | 50 | 100 |
| TOTAL | | 25 | 200 | 500 | 700 |

Date: 27.08.2018



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Chairperson

இரா. பிரேமலதா பூபேஷ்

தமிழ்த்துறைத் தலைவர்

புனித பீட்டர் உயர்க்கல்வி மற்றும் ஆராய்ச்சி நிறுவனம்
ஆவடி, சென்னை – 600 054.

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AVADI, CHENNAI-600054

**MINUTES OF THE 4th MEETING OF THE BOARD OF STUDIES IN
VISUAL COMMUNICATION**
Held on 27-08-2018

Members Present

| S.No | Name | Designation | Member | Signature |
|------|-------------------|---|-----------------|---|
| 1. | Mr.S. Kanthaswami | Assistant Professor & Head | Chairman |  |
| 2. | Mr. M.P. Prabhu | Assistant Professor, Department of Visual communication, Hindustan College of Arts and Science, Chennai | External Member |  |
| 3. | Mr.G.Aravind | Assistant Professor, Department of Visual communication, DG Vaishnav College, Chennai. | External Member |  |

| | |
|-----|---|
| 4.1 | Considered the minutes of the 3rd meeting of Board of Studies in Visual Communication held on 16-02-2018 RESOLVED that the minutes of 3rd meeting of Board of Studies in Visual Communication held on 16-02-2018 be confirmed. |
| 4.2 | Reviewed the Regulations & Syllabi of B.Sc Visual Communication programme under the Regulations 2016 with Choice Based Credit System (CBCS). RESOLVED that the Regulations & Syllabi of B.Sc Visual Communication programme under the Regulations 2016 with Choice Based Credit System (CBCS) be continued. |
| 4.3 | Reviewed and considered the curriculum feedback analysis and action taken report based on the suggestions given by the stakeholders. RESOLVED that curriculum feedback analysis and action taken report based on the suggestions given by the stakeholders to be approved. (Appendix-I) . |

Date: 27-08-2018




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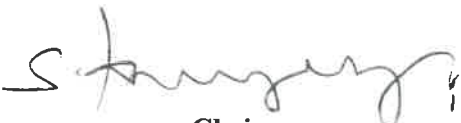

Chairman

Dept. of Visual Communication
St. Peter's Institute of Higher Education and Research
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Avadi, Chennai-600 054.

Appendix-I


| Programme | Stakeholders | Feedback | Recommendation | Action taken |
|-----------|--------------|---|--|---|
| VCU | Student | Students suggested the need for job oriented courses in industry and training for facing interviews during campus selection. They also requested to provide career guidance and expert talks by industrialists. | To offer multilingual program for advancing in technical domain. | Carrier guidance programs were given and counselling cell supported the development of soft skills and communication ability. |
| | Teacher | Teaching methods and teaching aids must be improved | Suggested advance learning | ICT methods and smart boards were Used for effective teaching. |

Date: 27-08-2018


Chairman

HOD
 Dept. of Visual Communication
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