Pharmacy

Part A

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I Institutional Information

I.1 Name and address of the institution and affiliating university

(Instruction: The name, address of the institution, and the name of the university, which has given affiliation to this institution, are to be listed here.)

NSHM Knowledge Campus, Kolkata - Group of Institutions, 124(60), B.L. Saha Road, Kolkata - 700053.

Maulana Abul Kalam Azad University of Technology, West Bengal, MAKAUT (Formerly known as West Bengal University of Technology), BF-142, Sector - I, Salt Lake City, Kolkata - 700064.

I.2 Name, designation, telephone number, and e-mail address of the contact person for the NBA

(Instruction: The name of the contact person, with other details, has to be listed here.)

Name	Dr. Subhasis Maity	
Designation along with address	Director, NSHM Knowledge Campus, Kolkata - Group of Institutions 124(60), B.L. Saha Road, Kolkata -700 053, West Bengal	
State	West Bengal	
Phone No.	(033) 24033424, (033) 24032300, (033) 24032301	Mobile : 9903250735
Fax No.	033 -24033424	Email: subhasis.maity@nshm.com

I.3 History of the institution (including the date of introduction and number of seats of various programmes of study along with the NBA accreditation, if any) in a tabular form

(Instruction: History of the institution and its chronological development along with the past accreditation records need to be listed here.)

Level	Programme	FullTime/ PartTime/ Sandwich	Year of Starting	Intake Sanctioned	Year of Enhancement	Sanctioned Enhancement	Accreditation Status A/NA/PA	NBA Accreditation Visits
U.G.	Pharmacy	Full Time	2005	60	2013	60	NA	Nil
P.G.	Pharmacy (Pharmaceutics)	Full Time	2009	10	2012	14	NA	Nil
P.G.	Pharmacy (Pharmacology)	Full Time	2010	18	2012	6	NA	Nil
P.G.	Pharmacy (Pharm. Chemistry)	Full Time	2010	18	NA	0	NA	Nil
P.G.	Pharmacy (Pharm. Analysis & Q.A.)	Full Time	2011	18	NA	0	NA	Nil
P.G.	Management	Full Time	2007	60	2010	60	NA	Nil
P.G.	Management	Part Time	2013	60	NA	0	NA	Nil
P.G.								

Diploma	Management	Full Time	2010	60	NA	0	NA	Nil

I.4 Ownership status

(Instruction: Ownership status of the institute has to be listed here.)

private self-financed

I.5 Mission and Vision of the Institution

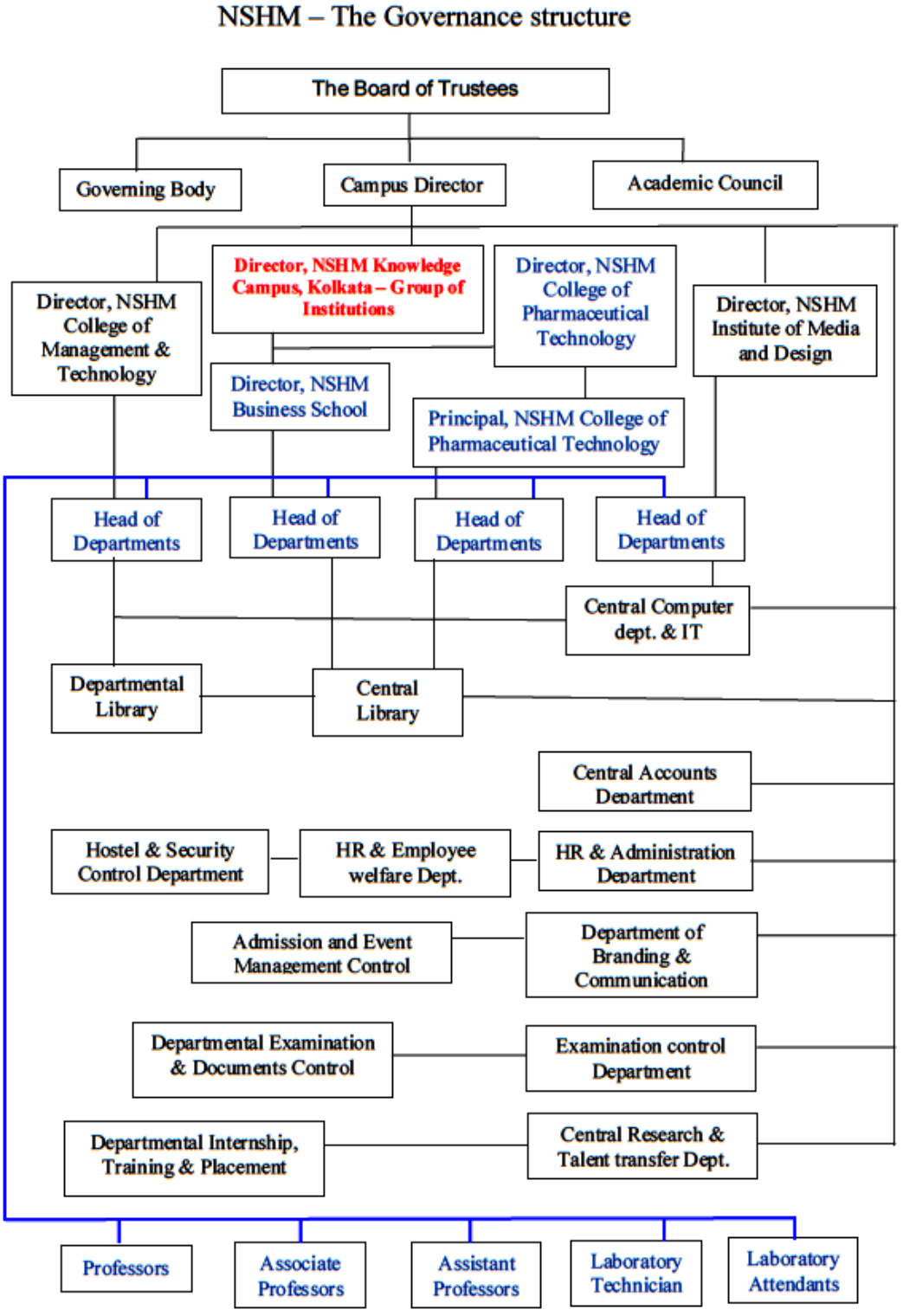
(The institution needs to specify its Mission and Vision).

MISSION - To bring prosperity to the society and enhance quality of life by imparting and advancing knowledge and skills, unleashing creative abilities and inculcating responsibile and responsive values and attitudes.

VISION - To be a knowledge hub of global excellence.

I.6 Organisational Structure

Organisational chart showing the hierarchy of academics and administration is to be included.



I.7 Financial status

(Instruction: Financial status of the institute has to be mentioned here.)

private self-financed

I.8 Nature of the trust/society

(Instruction: Way of functioning and activities of the trust/society have to be listed here.)

Hari Charan Garg Charitable Trust, having its office at **124, B.L. Saha Road, Kolkata – 700053** had been formed in the year 1992 with an object to establish, arrange, maintain, grant/aid or other financial assistance to educational institutions for the development of education and diffusion of knowledge, either moral, technical, industrial, scientific or otherwise. Assimilating the advances made in various areas of activity and considering the educational needs of the region, Pharmacy, Healthcare & Management institutions had been established to re-orient general, technical and professional expertise with a holistic approach.

NSHM Knowledge Campus, Kolkata – Group of Institutions

The dynamic Kolkata Campus has the NSHM College of Management and Technology, NSHM College of Pharmaceutical Technology, NSHM Institute of Media and Design and an integrated NSHM Business School offering world-class MBA programme. With changing times, we have taken growth and innovation along our stride to address industry demands. Our affiliation with leading international institutes as knowledge partners, enable students to access a rich pool of resources for receiving the best of what they need by the end of their course. Moreover, we have embraced academics from a variety of disciplines, enabling us to produce a curriculum that teaches us to deal with the big issues facing enterprises today from different perspectives.

About the department

NSHM College of Pharmaceutical Technology (Formerly H C Garg Institute of Science & Technology) was established in 2005 as a Centre of Excellence in the field of pharmaceutical sciences. NSHM College of Pharmaceutical Technology, a part of NSHM Knowledge Campus, Kolkata is promulgating its thumping presence to introduce the Institution for creation of ethical awareness about Pharmaceutical Technology & Healthcare Systems and services to the society and enhancement of the quality of life. NCPT is determined to produce a new breed of LEADERS in the arena of pharmaceutical profession with its vast expertise in making hundreds of students realize their goals through Pharmacy specialized courses and/or Pharmacy oriented interactive workshops & seminars related to GMP, GLP, ISO and Entrepreneurship development workshops, Business case-studies, Pharmaceutical Marketing Research Programmes, different trainings and Management Development Programmes which are suitably fabricated for taking care of personal development sessions for each and every student.

Name of the Institution	Year of Establishment	Location
NSHM Knowledge Campus, Kolkata - Group of Instituions	2010	Kolkata
NSHM College of Management & Technology	2008	Kolkata
NSHM Institute of Media & Design	2006	Kolkata

I.9 External sources of funds

(Instruction: The different sources of the external funds over the last three financial years are to be listed here.)

Name of the external source	2015-2016	2014-2015	2013-2014	2012-2013
Rameshwardasji Birla Smarak Kosh	100000	0	50000	0
Emami Project	825000	0	0	0

I.10 Internally acquired funds

(Instruction: The different sources of the internal funds over the last three financial years are to be listed here.)

Name of the internal source	2015-2016	2014-2015	2013-2014	2012-2013
Students' Fees	71937250	71730090	63858220	57894600
Interest on Bank Deposit	139686	127900	382875	393750
Total	72076936	71857990	64241095	58288350

I.11 Scholarships or any other financial assistance provided to students

(Instruction: If any scholarship or financial assistance is provided to the students then the details of such assistance over the last three financial years has to be listed here. Also, mention needs to be made of the basis for the award of such scholarship.)

2015-2016	2014-2015	2013-2014	2012-2013	Type of scholarship
0	39000	16800	97750	SC,ST,OBC (Post Matric Scholarship by Govt. of West Bengal)
650000	280000	105000	237000	Minority-merit-cum-means Scholarship by Govt. of West Bengal
48000	11500	2090	2430	Private Funding (Sitaram Jindal Foundation & IPA Bengal branch)
375000	304000	185000	0	Institutional free-ship (Half freeship)
1800000	1672400	674860	300000	Merit & General Scholarship
238800	38000	95600	82000	Sibling & Special Scholarship

I.12 Basis/criterion for admission to the institution

(Instruction: The basis/criterion for student intake has to be listed here.)

a. Process of admission in B.Pharm Course

The admission of candidate would be subject to clearing as per the guidelines of Department of Higher Education, Govt. of West Bengal. Candidates need to have cleared 10+2 (Science Stream) - Higher Secondary / Sr. Secondary Exam or equivalent courses from any recognized Board with minimum 45% marks in Physics, Chemistry & Mathematics in aggregate with a valid rank of FOLLOWING examinations: All India entrance / State- level entrance / University entrance / 12th standard mark sheet / others. The seats at UG level (B.Pharm) allotted through the counseling as per merit.

1ST year B.Pharm Admission

10% intake are filled by All India Entrance Test (AIEEE / All India JEE Mains).

10% intake are filled under Management Quota with AIEEE./ All India JEE Mains / WBJEE as per guidelines of Higher Education Dept., Govt. of West Bengal.

80% intake are filled by State Level Joint Entrance Examination (WBJEE).

5% Tuition Fee Waiver as per guidelines of Higher Education Dept., Govt. of West Bengal, for the students with valid rank in WBJEE Merit List.

2nd year B.Pharm Admission

20% of sanctioned intake & vacant drop-out seats are filled by The Joint Entrance Examination for lateral entry (WB JELET Rank) with D.Pharm qualified candidates.

b. Process of admission in M.Pharm Course

Candidates must be a B.Pharm graduate with a valid rank of GPAT / PGET conducted by MAKAUT (Formerly known as West Bengal University of Technology). The admission of candidate would be subject to clearing as per the guidelines of Department of Higher Education, Govt. of W.B. The seats at PG level (M.Pharm) are allotted through the counseling as per merit.

c. Process of admission in MBA & PGDM

Based on MAT / JEMAT score along with written test & personal interview conducted by our college. Besides above students should have attained graduation degree from full time course in any discipline.

I.13 Total number of students

(Instruction: Total number of students, both boys and girls, has to be listed here. The data may be categorised in a

tabular form under graduate or post graduate pharmacy, or other programme, if applicable.)

	Program	Level	2014-2015	2013-2014	2012-2013	2011-2012
Total no. of boys:	Pharmacy & Management	UG & PG	367	343	265	257
Total no. of girls:	Pharmacy & Management	UG & PG	227	190	161	153
Total no. of students:	Pharmacy & Management	UG & PG	594	533	426	410

I.14.1 Total number of employees in Regular Staff

(Instruction: Total number of employees, both men and women, has to be listed here. The data may be categorised in a tabular form as teaching and supporting staff.)

Items	2014-2015 Min	2014-2015 Max	2013-2014 Min	2013-2014 Max	2012-2013 Min	2012-2013 Max	2011-2012 Min	2011-2012 Max
Male teaching staff in pharmacy	24	24	21	21	18	18	18	18
Female teaching staff in pharmacy	11	11	11	11	10	10	10	10
Male teaching staff in science & humanities	4	4	4	4	2	2	2	2
Female teaching staff in science & humanities	2	2	2	2	2	2	2	2
Male non-teaching staff	17	17	18	18	20	20	20	20
Female non-teaching staff	2	2	2	2	3	3	3	3

I.14.2 Total number of employees in Contract Staff

(Instruction: Staff strength, both teaching and non-teaching, over the last three academic years has to be listed here.)

Items	2014-2015 Min	2014-2015 Max	2013-2014 Min	2013-2014 Max	2012-2013 Min	2012-2013 Max	2011-2012 Min	2011-2012 Max
Male teaching staff in pharmacy	0	0	0	0	0	0	0	0
Female teaching staff in pharmacy	0	0	0	0	0	0	0	0
Male teaching staff in science & humanities	0	0	0	0	0	0	0	0
Female teaching staff in science & humanities	0	0	0	0	0	0	0	0
Male non-teaching staff	0	0	0	0	0	0	0	0

II Programme Specific Information

II.1 Name of the Programme

(List name of the programme, as it appears on the graduate's certificate and transcript, and abbreviation used for the programme.)

Under Graduate Programme in Pharmacy (Bachelor of Pharmacy)

II.2 Title of the Degree

(List name of the degree title, as it appears on the graduate's certificate and transcript, and abbreviation used for the degree.)

Bachelor of Pharmacy (B.Pharm)

II.3 Name, designation, telephone number, and e-mail address of the Programme coordinator for the NBA

Name	Dr. Subhasis Maity	
Designation along with address	Director, NSHM Knowledge Campus, Kolkata- Group of Institutions. 124(60), B.L. Saha Road, Kolkata -700 053, West Bengal	
State	West Bengal	
	(033) 24033424, 24032300,	

Phone No.	24032301	Mobile : 9903250735
Fax No.	033 -24033424	Email : subhasis.maity@nshm.com

II.4 History of the programme along with the NBA accreditation, if any

Level	Programme of Study	Initial Intake started with Number of seats	Accreditation Status A/NA	In Year	Intake increased to	In Year	Earlier Accreditation Status	Year of obtaining Accreditation
Under Graduate	Pharmacy	60	NA	2005	120	2013	NA	NA

II.5 Deficiencies, weaknesses/concerns from previous accreditations

Applying for the first time NBA Accreditation.

II.6 Total number of students in the programme

	Program	Level	2014-2015	2013-2014	2012-2013	2011-2012
Total no. of boys:	Pharmacy	Pharmacy	235	181	128	126
Total no. of girls:	Pharmacy	Pharmacy	154	119	95	83
Total no. of students:	Pharmacy	Pharmacy	389	300	223	209

II.7 Minimum and maximum number of staff for the current and three previous academic years (1st July to 30th June) in the programme

Items	2014-2015 Min	2014-2015 Max	2013-2014 Min	2013-2014 Max	2012-2013 Min	2012-2013 Max	2011-2012 Min	2011-2012 Max
Teaching staff with the programme	35	35	32	32	28	28	28	28
Non-teaching staff	19	19	20	20	23	23	23	23

II.8 Summary of budget for the CFY and the actual expenditure incurred in the CFYm1, CFYm2 and CFYm3 (exclusively for this programme in the department)

(Instruction: Items like Laboratory equipment,Software,Laboratory consumables,Maintenance and spares,Travel,Miscellaneous expenses for academic activities and Total.)

Items	Budgeted in CFY 2015-2016	Actual expenses (till …) in CFY 2015-2016	Budgeted in CFYm1 2014-2015	Actual Expenses in CFYm1 2014-2015	Budgeted in CFYm2 2013-2014	Actual Expenses in CFYm2 2013-2014	Budgeted in CFYm3 2012-2013	Actual Expenses in CFYm3 2012-2013
Labortory Euipment	300000	184610	200000	0	200000	178868	200000	0
Software	300000	275953	250000	296778	200000	38761	200000	249224
R & D	100000	12568	100000	76532	0	0	0	0
Laboratory Consumables	500000	513141	400000	237752	400000	428888	400000	462949
Maintenance and spares	600000	428094	600000	584647	500000	457692	400000	369213
Training and Travel	100000	39761	100000	81323	75000	32169	75000	54853
Miscellaneous expenses for academic activities	10000000	7563802	10000000	9863023	8000000	6679625	8000000	7105290
Others	5000000	4028274	5000000	5157962	5000000	4223662	5000000	4044662

Part B

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1 Vision, Mission and Programme Educational Objectives (75) **Total Marks 65.00**

1.1 Mission and Vision (5) **Total Marks 5.00**

1.1.1 State the Vision and Mission of the institute and department (1) Institute Marks 1.00

(List and articulate the vision and mission statements of the institute and department.)

Vision of the Institute

To be a knowledge hub of global excellence.

Mission of the Institute

To bring prosperity to the society and enhance the quality of life by imparting knowledge and advancing knowledge & skill, unleashing creative abilities and inculcating responsible and responsive values and attitudes.

Vision of the Department

Towards accomplishment of the Institute's vision, NSHM College of Pharmaceutical Technology offers high quality technical education by providing strong teaching & excellent learning environment in order to transform the young learners into globally competitive industry ready professionals.

Mission of the Department

In pursuance of the above, the mission of the department is to imbibe proactive professionalism among the students by providing high quality of Under Graduate & Post Graduate programme in Pharmaceutical Technology. The Department promotes to pursue innovative knowledge, collaborative activities and hands-on training in pharmaceutical equipments and to compete for professional careers and higher studies.

1.1.2 Indicate how and where the Vision and Mission are published and disseminated (2) Institute Marks 2.00

(Describe in which media, e.g. websites, curricula books, the vision and mission are published and how these are disseminated among stakeholders.)

Published on the college page of Institute website and can be accessed through:

www.nshm.com/colleges/college-of-pharmaceutical-technology.

Published on College Notice Boards, Departmental Seminar Room and Laboratories

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1.1.3 Mention the process for defining Vision and Mission of the department (2) Institute Marks 2.00

(Articulate the process involved in defining the vision and mission of the department from the vision and mission of the institute.)

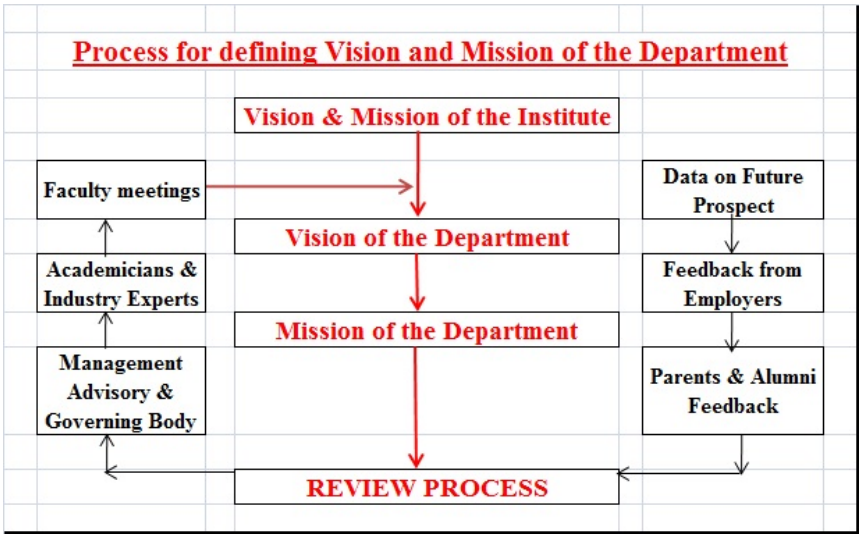
The department and the institute formulated the vision and mission through a series of recommendation from the stakeholders of the institute, the future scope of developing the institute and the career opportunities of the pharmacy profession.

In establishing the vision and mission of the department, the following steps were followed:

Step 1: Vision and Mission of the institute are taken as basis in alignment with the institutional vision & mission at departmental meetings along with Principal & Director.

Step 2: Views are taken from stakeholders of the Department such as pharmaceutical industry, eminent academicians, parents and professional experts.

Step 3: The recommended views are discussed and reviewed by Academic Core Committee to simulate the vision and mission of the department as well as the Institute, finally approved by the Governing Body.



1.2 Programme Educational Objectives (10) — Total Marks 9.00

1.2.1 Describe the Programme Educational Objectives (PEOs) (2) — Institute Marks 2.00

(List and articulate the programme educational objectives of the programme under accreditation.)

Program Educational Objectives of the Under Graduate programme in Pharmacy are :

PEO 1: Established themselves as successful professionals in the profession of pharmacy with confidence and global competitiveness and made intellectual contributions to it.

PEO 2 : Carried out advanced studies and acquired higher qualifications applying his or her knowledge and experience towards an advanced professional degree.

PEO 3 : Attained capabilities as successful team member using effective communications and teamwork skills

PEO 4 :. Pursued a career for life-long learning with personal & professional growth, superior work ethics and character.

1.2.2 State how and where the PEOs are published and disseminated (2) — Institute Marks 2.00

(Describe in which media, e.g. websites, curricula books, the PEOs are published and how these are disseminated among stakeholders.)

- PEOs are effectively communiced with the management, faculty, alumni, parents, employers and students through meetings, e-mails.
- The PEOs are displayed in the department office, department library & laboratories.
- The PEOs are well published in the department page of the institute website-

  Institute website : http://www.nshm.com

  College website : http://www.nshm.com/colleges/college-of-pharmaceutical-technology

Additionally the dissemination of PEOs to all the stakeholders of the program is done through faculty meetings, student awareness & counseling seminars, student induction program, and parent meetings.

1.2.3 List the stakeholders of the programme (1) — Institute Marks 1.00

(List stakeholders of the programme under consideration for accreditation and articulate their relevance.)

Major stakeholders of our programme are :

Student

- Most appropriate role in the programme.
- Students feedback is considered to introduce innovative teaching and learning methodologies.
- Students interaction will help in program to select the elective courses to meet current trends.

Faculty

- Involve a vital role in implementing the programme.
- Faculty involves in various committees to check the consistency of the programme.
- Faculty provides inputs for designing the programme, PEOs/POs establishment, Course Objectives and assessment.

Alumni

- Focus group because they are a measure of the long-term success of the programme.
- Alumni feedback helps in training/placement of the students to get them acquainted with industry interface.
- Recollect their existence during their programme study and suggest necessary inputs in point of student career.
- Improvement in PEOs and POs of the Programme.

Employer

- Represents the major end evaluators of our graduates for specific employment requirements.
- Gives higher focus to the program on future data to create awareness with current industry.
- Gives inputs which overcome the gap between academia industry interface.
- Improvement in placements, Higher studies etc.

Parents

- Expects their wards in good professional career and/or higher education as well as to grow into a responsibile citizen.

1.2.4 State the process for establishing the PEOs (3) Institute Marks 2.00

(Describe the process that periodically documents and demonstrates that the PEOs are based on the needs of the programme's various stakeholders.)

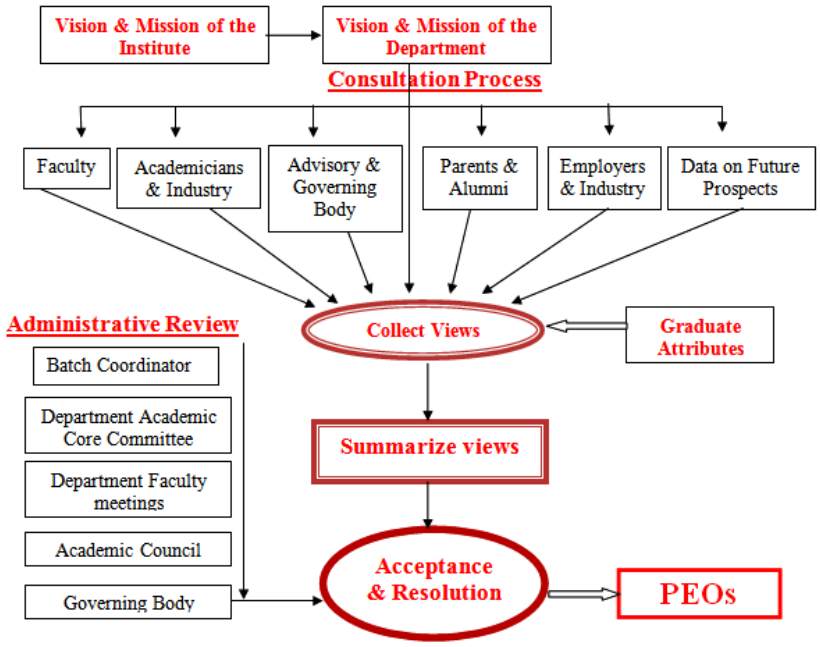
The Program Educational Objectives are established through a consultation process involving the core constituents such as: Students, Alumni, Faculty, Employer & Parents. The PEOs are established through the following steps:

Step 1: Vision and Mission of the Department are taken as a basis to interact with various stakeholders and graduate attributes defined by NBA are also kept in view.

Step 2: Batch Coordinator consults the key constituents and collects their views and submits the views to the department's Academic Core Committee.

Step 3: Department's Academic Core Committee summarizes the collected views in the Faculty meetings and expresses its opinion on the views and further forwards the same to Institute's Academic Council through the Principal.

Step 4: Institute's Academic Council deliberates on the views expressed by the Department's Academic Core Committee and formulate the accepted reviews based on which PEOs are established and resolved through the Governing Body members.



1.2.5 Establish consistency of the PEOs with the Mission (2) Institute Marks 2.00

(Describe how the Programme Educational Objectives are consistent with the Mission of the department.)

The Mission of the department is to provide high quality innovative education through U.G. programme in pharmaceutical technology so that the students prosper in their career or pursue higher education to compete in the professional world.

The following table establishes the ratio and level of correspondence between the objectives and mission components of the Institute.

H- High, M- Medium, L- Low.

Mission Components

	Proactive professionalism	Innovation & Research Aptitude	Team work & Industrial Orientation

PEOs	(M1)	(M2)	(M3)
PEO-1 - Established themselves as successful professionals in the profession of pharmacy with confidence and global competitiveness and made intellectual contributions to it.	H	M	H
PEO-2 Carried out advanced studies and acquired higher qualifications applying his or her knowledge and experience towards an advanced professional degree.	M	H	M
PEO-3 Attained capabilities as successful team members using effective communications and teamwork skills.	H	M	H
PEO-4 Pursued a career for life-long learning with personal & professional growth, superior work ethics and character	H	H	L

1.3 Attainment of Programme Educational Objectives (20)

Total Marks 18.00

1.3.1 Justify the contribution of the Programme Curriculum towards the attainment of the PEOs (10)

Institute Marks 9.00

(Describe the broad curricular components that contribute towards the attainment of the Programme Educational Objectives.)

The description of broad curriculum components of UG Pharmacy Programme relevent to the PEOs is shown in the following table along with curriculum mapping:

H- High, M- Medium, L- Low.

Curriculuar Component	Credit	PEO-1	PEO-2	PEO-3	PEO-4
Mathematics & Computing Sciences	11.5 (5.25%)	M	M	L	L
Basic Sciences	42.5 (19.41%)	H	M	H	L
Applied Sciences	37 (16.89%)	M	M	L	H
Core subjects	109 (49.77.%)	H	H	H	H
Communication & Professiobal Skills	19 (8.68%)	H	H	H	M
Total	219	27.63%	25%	25%	22.36%

	(100%)				

1.3.2 Explain how the administrative system helps in ensuring the attainment of the PEOs (10) Institute Marks 9.00

(Describe the committees and their functions, working process and related regulations.)

Sl. No.	As per AICTE guidelines	GOB Members
The Governing Body shall have at least eleven members including the Chairman and the Member-Secretary. The Registered Society/Trust shall nominee six members including the Chairman and the Member-Secretary, and the remaining five members shall be nominated as indicated below		
a)	**Chairman** to be nominated by the Registered Society/Trust The **Chairman** of the Governing Body shall preferably be a technical person either entrepreneur of an industrialist or an educationist of repute who is interested in development of technical education and as demonstrated an interest in promotion of quality education	Mr. Arnab Roy, Co-Founder & Director, NSHM Knowledge Campus, Kolkata: **Chairman**
b)	Principal / Director of the concerned technical institution (as nominee of society / trust) – **Member Secretary**	Prof. (Dr.) Subhasis Maity, Director, NSHM College of Pharmaceutical Technology, Kolkata: **Member Secretary**
c)	Two to five members to be nominated by the Registered Society / Trust, **Members**	Mr. Cecil Antony, Managing Trustee: **Members** Mr. Rajib Chanda, Co-Founder & Director NSHM Knowledge Campus, Kolkata: **Members** Prof. Krishnendu Sarkar, Director, NCMT, Kolkata: **Members** Prof. Naveen Das, Director, NBS, Kolkata: **Members**
d)	Nominee of the All India Council for Technical Education – Regional Officer (**Ex-Officio Members**)	All India Council for Technical Education-Regional Officer (AICTE- ERO), Kolkata: **Ex-Officio Members**
e)	Nominee of the Affiliating Body / University / State Board of Technical Education: **Nominated Member**	Dr. Sitanath Mazumdar, Prof. Dept. of MBM, University of Calcutta (**WBUT Nominee**)
f)	Nominee of the State Government – Director of Technical Education (ex-officio): **Nominated Member**	Dr. Sajal Dasgupta, Director, Directorate of Technical Education, Govt. of West Bengal: **Nominated Member**
g)	An Industrialist / technologist / educationist from the Region nominated by the State Government: **Nominated Member**	Dr. Srimanta Patra, Associate. Professor, Govt. College of Engineering & Ceramic Technology, Kolkata (**State Govt. Nominee**)
i)	An Industrialist / technologist / educationist from the Region to be nominated by the concerned Regional Committee as nominee of the Council, out of the panel approved by the Chairman of the Council. **Member**	***Management*** Mr. Kalyan Debnath, Executive Vice President, Peerless, Kolkata: **Member** Mr. Subrata Ray, Sr. Manager, Tata Steel, Kolkata: **Member** ***Pharmacy*** Dr. (Mrs.) Neena Sharma, Executive Vice President, Emami Limited, Kolkata: **Member** Prof. Biswajit Mukherjee (Prof., Dept. of Pharmacy, Jadavpur University): **Member**
j)	Two Faculty members to be nominated from amongst the regular staff one at the level of Professor and one at the level of Assistant Professor: **Member**	Dr. Supriya Biswas, Professor - NSHM Business School, Kolkata: **Member** Prof. Tapas Pal, Professor - NSHM College of Pharmaceutical Technology, Kolkata: **Member**
The number of members can be increased equally by adding nominees of the registered Society and by adding an equal number of educationists from the Region keeping in view the interest of the Technical Institution. The total number of members of a Governing Body shall, however, not exceed 21		

Responsibilities of Governing Body

1. Governing Body members are nominated on the basis of AICTE regulation.
2. Conduct quarterly meetings for continuous upgradation of academic performance.

3. Analysis semester results of the students and advise on developmental issues.
4. Faculty selection process, Faculty achievement and training are assessed.
5. Analysis audited Balance Sheet and Budgetary allocation of regular practical and project work.
6. Admission status & expansion of UG & PG programmes.
7. Scope for placement and future developments and planning.
8. Resource verification & employees' welfare activities.
9. Measures for prevention of ragging.

2. Academic & Laboratory Development Committee -

i. Mr. Tapas Kr. Pal – Convener
ii. Dr. Goutam Pramanik
iii. Dr. Sutapa Biswas Majee
iv. Mr. Nilanjan Sarkar
v. Mr. Pravanjan Bhakta

Responsibilities of Academic & Laboratory Development Committee:

1. To oversee the implementation, management and monitoring of the Institute's Academic quality enhancement programme.
2. To review the Teaching & learning process as per the Institute guidelines annually.
3. To receive Students Feedback regarding teaching and learning process and in case if there are short comings, initiates the remedial efforts.
4. Conducting periodic reviews of lesson plans of teaching, learning and assessment in each department (both theory and practical sessions).
5. Monitoring the improvement in utilization of Lab equipments by special design of Practical classes.
6. Preparation of Class Routine semester wise & year wise
7. Monitoring the programme of internal reviews of learning and teaching
8. To liaise with other committees on matters relating to Academic audit and discuss about remedial measures in the Faculty meetings
9. To advise Institute's Academic Council on any changes to the teaching learning process as well as the academic audit procedures.
10. To convene at least two meetings every semester.

3. Examination Committee:

i. Mr. Angshuman Lahiri – Convener
ii. Dr. Musfiqua Mookerjee
iii. Dr. Tapan Giri
iv. Mr. Dhrubajyoti Sarkar
v. Mr. Samit Bera
vi. Mr. Arup Chatterjee
vii. Mr. Baisnab Das Pathak

Responsibilities of Examination Committee:

1. Ensuring syllabus coverage with respect to time according to course curriculum.
2. Planning and conducting exam events (Sessional, Seminars,Practical Exams, Project Presentation evaluation, etc. inclusive of theory and laboratory practice as prescribed by the curriculum and syllabus committee)
3. Ratifying Board of examiners (internal and external)
4. Monitoring the question paper setting process, evaluation process, tabulation & result declaration processes.
5. Providing guidelines to cut-off timelines to facilitate conduct of two sessional Exams per semester.
6. Redress appeals related to results and exam system
7. Statistical analysis of results
8. Ensuring communication of regulations, amendments and updates to students and faculty, exam relating to mattes well in-time.
9. Ensuring minimal deviations/departures from laid out procedures with respect to duties of all personnel involved in exam duties
10. Convener to conduct a minimum of 4 meetings per semester for appraisals/ratifications/discussion of exam policy matters

4. Admission committee:

i. Dr. Sekhar Kr. Bose- Convener
ii. Mr. Sibram Paria
iii. Mr. Supriya Mana
iv. Mr. Tapas Kr. Pal
v. Mr. Subhankar Dash

Responsibilities of the Admission Committee:

1. To Monitor and keeping the Institute's requirement for student admission
2. To make recommendations concerning admission of students of Undergraduate, Post Graduate and Doctoral programme.
3. To function as per norms of statutory bodies such as AICTE, MAKAUT & Higher Education Dept., Govt of W.B.
4. To provide operational procedures i.e. the roles of staff, involved in the admission process and lay down the framework for a transparent and fair admissions process.
5. To recommend and review admission and re-admission policies that ensure the institute as a highly sought after one by the student-parent community.
6. To review procedure & forms for admission and revise them as needed.
7. To keep the Governing body informed of trends in admissions.
8. The Admissions Committee shall meet at least twice in a semester for 6 months duration to ensure the proper functioning of the Committee by meeting twice in a semester.

5. Training, Placement & Tour Committee:

i. Mr. Swarupananda Mukherjee – Convener
ii. Mr. Tapas Kumar Pal
iii. Mr. Nilanjan Sarkar
iv. Dr. Gopa Roy Biswas
v. Mr. Sibram Paria
vi. Mrs. Satarupa Acharjee

Other administrative committees are put in place to ensure the attainment of PEOs & POs.

Sl. No.	Name of the Committees	Frequency of the meetings	Avg. Attendance per meeting
1	Anti Ragging Committee	Annually or as and when required	85%
2	Library Committee	Quarterly	80%
3	Store Committee	Quarterly	80%
4	Statutory Committee (UG & PG)	As per requirement	60%
5	Website Development & Upgradation Committee	Quarterly	60%
6	Journal & Paper Publication Committee	Annually	60%
7	Purchase Committee	Quarterly	80%
8	Event, Seminar & Presentation	Quarterly	60%
9	Infrastructure Committee	As per requirement	60%

1.4 Assessment of the attainment of Programme Educational Objectives (30) **Total Marks 25.00**

1.4.1 Indicate tools and processes used in assessment of the attainment of the PEOs (5) Institute Marks 5.00

Describe the assessment process that periodically documents and demonstrates the degree to which the Programme Educational Objectives are attained. Also, include information on:
a) A listing and description of the assessment processes used to gather the data upon which the evaluation of each programme educational objective is based. Examples of data collection processes may include, but are not limited to, employer surveys, graduate surveys, focus groups, industrial advisory committee meetings, or other processes that are relevant and appropriate to the programme;
b) The frequency with which these assessment processes are carried out.

Type of Assessment tool	Assessment tool	Criteria	Data Collection Frequency	Responsible Entity	Mapped PEO	PEO
Direct (70% weightage)	Course performance	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	Once in every semester	Maulana Abul Kalam Azad University of Technology, West Bengal	1,2,3,4	PEO 1: Established themselves as successful professionals in the profession of pharmacy with confidence and global competitiveness and made intellectual contributions.
Indirect (10% weightage)	Placement record	% of students engaed in Professional career	Once in every year	Training & Placement Committee	1,2,3,4	PEO 2 Carried out advanced studies and acquired higher qualifications applying his or her knowledge and experience towards an advanced professional degree.
Indirect (5% weightage)	Higher Studies record	% of students persued Higher Studies (M.Pharm / MBA / M.Tech	Once in every year	Training & Placement Committee	2, 4	PEO 3 Attained capabilities to act as successful team members using effective communications and teamwork skills.
Indirect (5% weightage)	GPAT/ NIPER / MAT / CAT / GRE /TOFEL/ OTHERS Competitive Entrance Exams	% of students having valid GPAT/ Competitive Qualifying score	Once in every year	Academic Committee	1,4	PEO 4:. Pursued a career for life-long learning with personal & professional growth, proper work ethics and character.
Indirect (10% weightage)	Alumni Feedback	Progress in CAREER ADVANCEMENT	Once After 3,4,5 years of graduation	Training & Placement Committee	1,3	

1.4.2 Give evidence for the attainment of the PEOs (25) Institute Marks 20.00

a) The expected level of attainment for each of the programme educational objectives;
b) Summaries of the results of the evaluation processes and an analysis illustrating the extent to which each of the programme educational objectives is being attained; and
c) How the results are documented and maintained.

File Name
PEO AND MISSION COMPONENTS
DIRECT AND INDIRECT ATTAINMENT OF PEOs
PEO-PO MATRIX
MAPPING OF PEOs

Achievement of PEOs are calculated using the tools shown in point 1.4.1. The direct assessment tool which uses class ACADEMIC performance (semester results) as an assessment method, is mapped with the PEOs. The correlation of PEO & PO is then used to calculate the attaiinment of PEOs.

In the indirect assessment, placement record, higher studies record, GPAT/PGET score and alumni survey feedback reports have been used. All the indirect tools have equal weightage for its calculations. In the overall attainment, weightage of 0.7 is given to the direct assessment, while 0.3 is assigned to indirect assessment.

- Enclosed academic performance (semester results).
- Mapping of CO & PO with PEOs.
- Mapping of PEO with placement / higher studies (No. of students opted for higher studies).
- Mapping of PEOs with alumni survey/ placement record / EXIT survey / feedback from employer.

Weighted average bar diagram above is shown in the data file (xls.) consisting of following things:

1. For evidence towards direct attainment (In Excel).

- Course result for all threee years.
- Mapping of POs & PEOs .
- Attainment values of PEOs

2. For evidence towards indirect attainment (In Excel).

- Placement record.
- Higher studies record (GPAT, PGET records).
- Alumni Survery record.

3. For evidence towards total attainment (In Excel)

- Weighted Average data for all three years.

1.5 Indicate how results of the assessment of achievement of the PEOs have been used for redefining the PEOs (10)

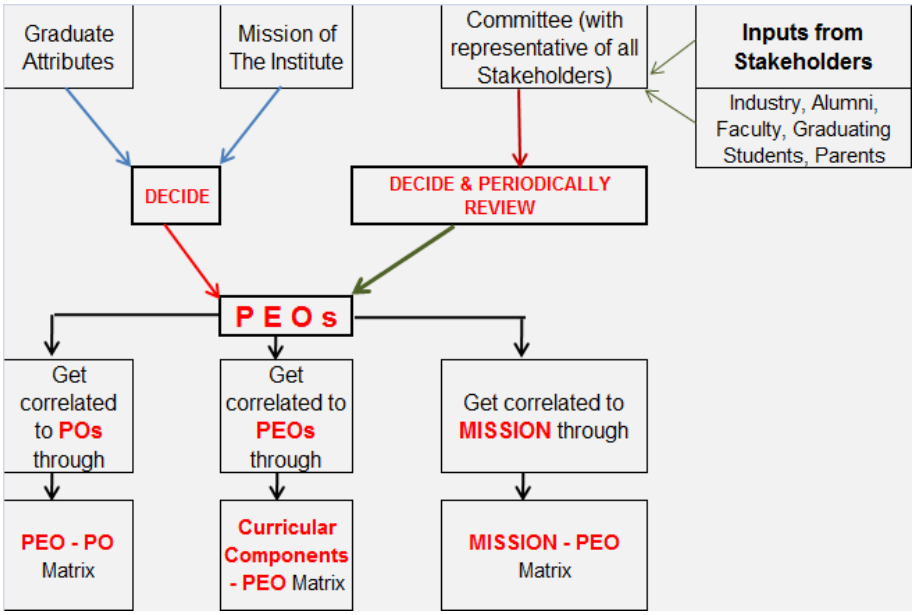
Total Marks 8.00

1.5 Indicate how results of the assessment of achievement of the PEOs have been used for redefining the PEOs (10) Institute Marks 8.00

(Articulate with rationale how the results of the evaluation of PEOs have been used to review/redefine the PEOs.)

The PEOs have been defined on the basis of feedback from students, faculty, invited guests faculty, employers, alumni etc. following the existing system prevailing in comparable institutes. At the end of each semester student feedback is collected providing the starting tools for reviweing PEOs. It is further defined with the feedback of industry representative, current market trend and possible amendment in the curriculum.

- To redefine, the existing PEOs assessment, results are gathered through direct and indirect assessment methods like alumni, empolyer and student exit survery feedback.
- Results of the feedback are reviewed at the next departmental Academic Core Committee meeting. Based on this result, recommendation for any changes in PEO or how those PEOs are evaluated, are solicted from the Core Committee members.
- These recommendations are reviewed by members of Academic Council & Governing Body & based on identified curricular gaps, appropriate changes in PEOs are amended and approved in G.B. meeting, if any.



2 Programme Outcomes (200) **Total Marks 169.00**

2.1 Definition and Validation of Course Outcomes and Programme Outcomes (25)

Total Marks 22.00

2.1.1 List the Course Outcomes(COs) and Programme Outcomes (POs) (2) Institute Marks 2.00

(List the course outcomes of the courses in programme curriculum and programme outcomes of the programme under accreditation.)

Course-1: HU 101 (Humanities)

Students should be able to

CO-1	Understand slowly-derived spoken material in Standard English to express himself in writing and to talk about day-to-day events and experiences of life.
CO-2	Speak clearly, confidently, fluently and communicate on routine matters with fellow listeners.
CO-3	Read different genres of texts adopting various reading speed (slow, fast, very fast)
CO-4	Read different kinds of texts for different purposes, for example, for relaxation, for information, for discussion at a later stage.
CO-5	Write flawlessly avoiding grammatical errors expressing ideas within restricted word limit using wide vocabulary range.
CO-6	Listen/ view and comprehend different spoken excerpts in different accents like intelligent listening in an interview, report writing etc.

Course-2: PT -101(Pharmaceutical Analysis)

Students will learn:

CO-1	The fundamentals of statistical concepts and some of their basic applications in science and Analytical Chemistry.
CO-2	The concept of acid based titrations, precipitation titrations, and oxidation reduction titrations and their applications in quantitative laboratory analysis.
CO-3	The principle, techniques of gravimetric analysis and its application in quantitative and qualitative estimation.

Course-3: M -103 (Remedial Mathematics)

Students will learn:

CO-1	Various algebraic procedures and application of determinants and matrices in Pharmacy.
CO-2	Students will learn to evaluate various limit problems both algebraically and graphically, to differentiate various types of functions using the differentiation rules and apply differentiation to find linear approximation, extrema, monotonicity, and concavity of functions,
CO-3	Students will be equipped with the basic knowledge and understanding in integral & differential calculus.

Course-4: PTB-101 (Remedial Biology)

CO-1	Students will learn about classification of plants and binomial nomenclature.
CO-2	Students will learn about Structure, location & function of plant cell with the process of cell division.
CO-3	Students will learn about morphology and histology of different parts of the plant.
CO-4	Students will learn about general survey of animal kingdom & structure with life history and pathogenecity of parasites and insects.

Course-5: PT -103 (Pharm. Chemistry – Inorganic)

CO-1	Students will acquire knowledge regarding preparations, uses, source of impurities of inorganic pharmaceuticals mentioned in I.P.
CO-2	Students will learn the test for purity, identity, and limit test of inorganic pharmaceuticals used in cosmetics, therapeutic and diagnostic preparations.
CO-3	Students will gather concept on acids, bases, buffers and learn their role in pharmacy.
CO-4	Students will learn about different types of gastrointestinal agents like dried aluminium hydroxide gel, Magnesium hydroxide etc and topical agents like Calamine, activated dimethicone, anti infective agents etc.
CO-5	Students will also learn about miscellaneous agents like sclerosing agents, expectorants, adsorbents, excipients etc.

Course-6: PT -106 (Pharmaceutical Dispensing)

CO-1	Students will be introduced to pharmacopeias and different types of formulation.
CO-2	Students will be accustomed to general dispensing procedures including labeling, physical, chemical and therapeutic incompatibilities in the preparation.
CO-3	Students will learn extempore preparations of different types of formulations against prescriptions.
CO-4	Students will learn the basic techniques of posology and different pharmaceutical calculation needed in pharmaceutical practice.
CO-5	Students will gain the basic concept of design maintenance of drug store and role of pharmacist in community health and education.

Course-7: PT-191 (Pharm Analysis Lab)

CO-1	Students will learn standardization of analytical weights and calibration of volumetric apparatus.
CO-2	Students will learn the techniques of acid base titrations, oxidation reduction titration.
CO-3	Students will also learn the techniques of gravimetric analysis.

Course-8: PT -196 (Pharmaceutics- Dispensing Lab)

CO-1	Students will be introduced to preparation, labeling and dispensing of different categories of medicinal products.
CO-2	Students will learn the principles of identification and correction of different types of incompatibilities in prescriptions and their dispensing procedure.

Course-9: PT -193 (Pharm Chemistry Lab)

CO-1	Students will learn the background and systematic qualitative analysis of inorganic mixtures.
CO-2	Students will learn to impart the ability to identify the presence of inorganic cations & anions as well as to perform the test of inorganic impurities present in a given pharmaceutical preparation.

Course-10: PTB -191 (Remedial Biology Lab)

CO-1	Students will learn handling of different types of microscopes.
CO-2	Students will learn identification of slides of structure and life cycle of lower plants and animals.
CO-3	Students will perform the experiments on morphological study of different parts of plant.
CO-4	Students will learn preparation of slides of different parts of the plants for microscopic examination.

Course-11: PT-203 (Pharm Chemistry – Physical Chemistry)

CO-1	Students will learn about behavior of gases (ideal & real) including different laws and theories.
CO-2	Students will learn about various physical properties of liquids such as surface tension, viscosity, refractive index etc.
CO-3	Students will gather knowledge on concepts of acids, bases, pH and buffers.
CO-4	Students will gather knowledge on properties of solutions and various theories relating to solutions.
CO-5	Students will learn laws of thermodynamics, phase equilibria, phase rule, theories of adsorption and chemical kinetics.

Course-12: M-203 (Advanced Mathematics & Engineering Mechanics)

CO-1	Students will learn exact and approximate numbers
CO-2	Basic concept of biometry especially descriptive statistics and hypothetic testing.
CO-3	Students will learn Rational of Laplace conversion in solving complex problems involving differential and integral calculus.
CO-4	Students will learn Concept of engineering mechanism behind the design of machines.

Course-13: PT-204 (Pharm Chemistry – Organic)

CO-1	Students will be able to acquire the information on properties of organic molecules from their structure.
CO-2	Students will be able to understand the Structure, Nomenclature, Preparation and Reactions of aliphatic organic compounds belongs to usual classification.
CO-3	Students will be able to understand the stereo chemistry of organic molecules.
CO-4	Students will be able to acquire the concept of aromaticity.

Course-14: HU-202 (Environment & Ecology)

Students will be able to:

CO-1	Understand and describe the fundamental concepts and basic principles of components of the environment with special emphasis on environmental degradation.
CO-2	Identify and recall the Elements of Ecology; Ecological balance and describe the basic principles governing environmental impact assessment.
CO-3	Explain Atmospheric composition, energy balance, climate, weather, depletion of ozone layer etc. Recognize the primary and secondary air pollutants, green house effect, and permissible standards of air pollutants.
CO-4	Define and demonstrate a comprehensive understanding of Hydrosphere, natural water, pollutants: their origin and effects, river / lake / ground water pollution, standards and control (Specifically arsenic, lead & mercury).
CO-5	Memorize and relate a brief outline about Lithosphere, pollutants (municipal, industrial, commercial, agricultural, hazardous solid wastes); their origin and effects, collection and disposal of solid waste, recovery and conversion methods.
CO-6	Assimilate the elementary knowledge necessary for understanding sources, effects, and permissible limits of noise pollution.
CO-7	Enumerate and justify, the steps required for effective control of the menace of various types of pollution.

Course-15: PT-202 (Pharmacognosy)

Students will learn to study, classify, identify and understand various medicinal compounds derived from plant sources and relate to therapeutic

CO-1 Students will learn to study, classify, identify and understand various medicinal compounds derived from plant sources and relate to therapeutic application.

CO-2 Students will learn to find out the various types adulteration.

CO-3 Students will learn to estimate the characteristics of natural products and their structure activity relationships as well as their possible effect and mode of actions in biological systems, including humans/animals.

CO-4 Students will learn to explain the different herbal drugs which have the same therapeutic effect like carminative, cardiotonic, astringents, antihypertensive, antitussive, antirheumatic, antitumor, antileprotics, antidysentries, antiseptics and disinfectants, antimalarials oxytocics, and vitamins.

Course-16: PT-205 (Physiology)

CO-1 Students will learn physiological properties, composition and functions of blood.

CO-2 Students will learn mechanism and function of cardiovascular, respiratory, digestive and respiratory systems.

CO-3 Students will learn about renal circulation, structures and functions of kidney, composition of urine.

CO-4 Students will also learn anatomical position, structure, function and disorder of endocrine glands.

Course-17: PT-293 (Pharm Chemistry – Physical Chemistry Lab)

CO-1 Students will learn determination of different physico-chemical properties of liquid like refractive index, specific optical rotation etc.

CO-2 Students will learn determination of partition coefficient of drugs

CO-3 Students will learn the technique of colorimetric estimation of medicinal preparations.

CO-4 Students will also learn handling of pH meter and determination acid-base dissociation constant.

Course-18: PT-294 (Pharm Chemistry – Organic Chemistry Lab)

CO-1 Students will be able to acquire various laboratory techniques relevant to synthesis of organic compound.

CO-2 Students will be able to apply systematic techniques and methods to identify unknown organic compounds and their derivatives.

CO-3 Students will acquire knowledge on the concept of stereo-models.

Course-19: PT-292 (Pharmacognosy Lab)

CO-1 Students will learn identification of crude drugs by morphological chcracteristics.

CO-2 Students will learn physical and chemical tests for evaluation of crude drugs.

CO-3 Students will learn identification of fibres and surgical dressings.

CO-4 Students will learn microscopic study of leaf, root, bark, flower and stem of plants

Course-20: PT-295 (Physiology Lab)

CO-1 Students will learn identification & study of different skeletal system, visceral organ through chart models & microscopes.

CO-2 Students will learn estimation of TC,DC,Hb,ESR, and determination of clotting time, bleeding time etc.

CO-3 Students will learn recording of body temperature, pulse rate, blood pressure and brief understanding of ECG-PQRST waves and their significance.

CO-4 Students will also learn handling of animals for performance of experiment.

Course-21: PT-304 (Pharm Chemistry – Organic)

CO-1 Students will be able to acquire knowledge of mechanism involved in the electrophilic and nucleophilic aromatic substitution reaction.

CO-2 Students will able to understand the structure, nomenclature, preparation and reactions of aromatic organic compounds belong to usual classification.

CO-3 Students will be able to understand the chemistry of Poly nuclear aromatic hydrocarbons.

CO-4 Students will be able to acquire the knowledge of systematic nomenclature and chemistry of some important heterocyclic compounds containing 5,6 atoms with one or two hetero atoms.

Course-22: PT-301 (Pharm Analysis)

CO-1 Students will learn the basic concept on non aqueous titrations, complexometric titration & other miscellaneous method of chemical analysis.

CO-2 Students will learn the basic theory & principle of different types of chromatographic techniques.

CO-3 Students will acquire theoretical consideration and application of potentiometry, conductometry and amperometry in drug analysis.

Course-23: PT-306 (Pharmaceutics – Physical Pharmacy)

CO-1 Students will learn the importance of properties of matter in pharmaceutical applications.

CO-2 Students will learn micromeretics and powder rheology in manufacture of different dosage forms

CO-3 Students will learn properties of fluids and application of surface and interfacial phenomenon, viscosity and rheology in pharmaceutical fields.

CO-4 Students will learn definitions, properties and application of various dispersion systems, reaction rate kinetics and stabilization of pharmaceuticals.

CO-5 Students will learn different methods of preparation, analysis & application of protein binding.

Course-24: PT-307 (Pharm Engineering)

CO-1 Students will be able to understand various physical and chemical laws governing different unit operations involved in pharmaceutical set-up.

CO-2 Students will gather basic concept on manometers, fluid friction and flow measurement devices.

CO-3 Students will be able to understand techniques of liquid, gas & solid handling relevant to pharmaceutical process.

CO-4 Students will be able to understand to select an ideal filter and centrifuge for separation of heterogeneous liquid systems.

CO-5 Students will be able to identify the underlying causes of operational hazards that may be encountered by the technical persons and decide on relevant safety measures for each type of hazard.

Course-25: CS 303 (Basic Electronics & Computer Application)

CO-1 Students will learn the fundamentals of computer, functions of different parts of computers and their application.

CO-2 Students will learn number system, boolean algebra, simplifications of logical expressions, simple digital circuits using logic gates.

CO-3 Students will gather knowledge on basic concept of operating system, its functions, and application of 9MS-DOS commands.

CO-4 Students will learn computer languages and programming using C languages.

Course-26: PT-305 (Anatomy, Physiology & Health Education)

CO-1 Students will learn basic structure, functions, and characteristics of elementary tissues, osseous systems, muscular systems, haemopoietic systems, digestive systems and lymphatic systems.

CO-2 Students will learn anatomy and physiology of digestive system, respiratory system and nervous system.

CO-3 Students will learn the basic concept of community health education including demographic family planning, communicable diseases.

CO-4 Students will learn first aid treatment of snake bites, emergency treatment of shock, burn, poisoning etc.

Course-27: PT-394 (Pharm Chemistry- Organic Chemistry Lab)

CO-1 Students will be able to acquire various laboratory techniques for synthesis of various compounds containing heterocyclic ring systems.

CO-2 Students will learn molecular modeling on isomers, double helical structures of.

CO-3 Students will be able to apply computational techniques and or stereo model methods to molecular modeling of different isomers & nucleic acids.

CO-4 Students will be able to synthesize compounds by perform reactions involving electrophilic aromatic substitutions.

Course-28: PT-391 (Pharm Analysis Lab)

CO-1 Students will learn the techniques, and performance of experiments on non aqueous and complexometric titrations.

CO-2 Students will learn performance of miscellaneous chemical analysis such as Diazotization titration, Kjeldahl method of nitrogen estimation, Karl Fischer titration etc.

CO-3 Students will learn various Chromatographic techniques like TLC, Column Chromatography and its application in analysis of medicinal preparations.

CO-4 Students will learn determination of alcohol content in medicinal preparation.

Course-29: PT-396 (Pharmaceutics – Physical Pharmacy Lab)

CO-1 Students will learn to perform overall characterization of powder samples and co-relate the flow properties with tablet manufacture.

CO-2 Students will learn to perform the experiments on determination of critical micelli concentration and hydrophilic liphophlilic balance value of surfectants.

CO-3 Students will learn to study the colloidal properties, preparation of suspensions, preparation and stability studies of emulsions.

CO-4 Students will learn to perform accelerated stability study, determination of shelf-life and date of expiry.

Course-30: PT-397 (Engineering Drawing Lab)

CO-1 Students will learn conventions of drawing, orthographic projections, scales etc.

CO-2 Students will learn to draw different geometric construction.

CO-3 Students will learn orthographic projection including 1^{st} & 3^{rd} angle concept.

CO-4 Students will learn sections and sectional views, bolted, riveted, welded and pipe joints and fittings.

Course-31: CS-393 (Basic Electronics & Computer Application Lab)

Course-31: CS-993 (Basic Electronics & Computer Application Lab)

CO-1 Students will perform exercise on computer programming using 'C' language for solving mathematical problems.
CO-2 Students will learn to perform the exercises on MS-DOS application.
CO-3 Students will learn creating tables using oracle, inserting data int tables, modify the structure of table.

Course-32: PT-406 (Pharmaceutics – Pharm Tech- I)

CO-1 Students will acquire knowledge on manufacture, packaging & quality evaluation of liquid semisolid dosage form, suppositories, aerosol and ophthalmic products.
CO-2 Students will be familiar with the principle, different method of extraction & preparation of galenical products.
CO-3 Students will have a basic idea about the collection processing and storage of whole human blood, all fractions individually & plasma substitutes.

Course-33: PT-402 (Pharmacognosy)

CO-1 Students will acquire knowledge about the occurrence, morphology, microscopy, active constituents and therapeutic uses of various drugs containing resins, tannins, volatile oils, fibers, pharmaceutical aids and different glycosides.
CO-2 Students will learn the characteristics and methods of extraction of volatile oils of menthe, cassia, lemon peel, orange peel etc.
CO-3 Students will acquire knowledge on study of traditional drugs, common vernacular names, botanical sources, chemical nature of chief constituents, pharmacology, categories, and common uses of some specified indigenous drugs.
CO-4 Students will acquire knowledge about the administration and uses of traditional system of medicine and some selected ayurvedic preparations.

Course-34: PT-404 (Pharm Chemistry – Biochemistry)

At the end of the course, students will learn:
CO-1 Mechanism of transport process through cell membrane, Production process of ATP and the significance of ATP production.
CO-2 The protein structure and its stereo-chemistry, nomenclature, kinetics, mechanism of action and inhibition of enzymes.
CO-3 Carbohydrate and lipid metabolism, significance, reactions of the citric acid cycle.
CO-4 The role of kinetics and application of enzymes in pharma industry.

Course-35: PT-405 (Physiology)

The student will acquire knowledge:
CO-1 On the physiology, mechanism of central nervous system and autonomic nervous system.
CO-2 On the mechanism of some specified sense organs and regulation of human body temperature.
CO-3 On the structure and function of human reproductive system.

Course-36: PT-407 (Pharm Engineering)

CO-1 Students will learn fundamental laws of physics & mechanics in the unit operations like heat transfer, evaporation, size reduction, size separation, mixing & crystallization along with the idea about mechanism used in the above operations.
CO-2 Students will have the basic idea about material of construction used in the fabrication,
CO-3 Students will be able to understand about linings and surface coating of pharmaceutical machineries.

Course-37: PT-496(Pharmaceutics – Pharm Tech Lab)

Students will learn:
CO-1 The technique of preparation, evaluation and packaging of liquid oral dosage forms, suppositories, eye drops, eye ointments and creams.
CO-2 Different techniques of extraction to prepare galenical products.

Course-38: PT-492 (Pharmacognosy Lab)

After learning the course, students will be able to
CO-1 Perform microscopic study of powdered crude drugs containing volatile oil, glycosides, alkaloids etc.
CO-2 Perform experiment on isolation, identification, separation and purification of various groups of constituents present in crude drugs of pharmaceutical significance.
CO-3 Perform chemical tests for alkaloids, glycosides, steroids, flavonoids, tennins, resins etc.

Course-39: PT-497(Pharm Engineering Lab)

Students will be able to:
CO-1 Perform a few experiments on size reduction, size separation.
CO-2 Perform experiments on evaporation, crystallization.
CO-3 Perform experiments on heat transfer and filtration.

Course-40: PT-494 (Pharm Chemistry – Bio chemistry Lab)

Students will be able to:
CO-1 Identify and perform experiments on carbohydrates (general), lipids, proteins and amino acids.
CO-2 Handle sophisticated instruments like UV-VIS-Spectrophotometer in the estimation of the bio-molecules.
CO-3 Perform the "FOOD ANALYSIS" of any given sample of food by applying the experiments they have performed.
CO-4 Estimate SGOT, SGPT and ALP in the serum.

Course-41: PT-506 (Pharmaceutics – Pharm Tech – II)

Student will:
CO-1 Learn formulation, manufacturing, packaging, quality evaluation of tablets and capsule dosage form.
CO-2 Acquire knowledge about structure and function of skin, hair and fundamental concept of cosmetic science,
CO-3 Learn formulation, preparation, packaging and quality evaluation of different cosmetic products.
CO-4 Learn stability study and quality assurance of pharmaceutical preparations.

Course-42: PT-508 (Pharmacology)

Students will learn
CO-1 General pharmacology including routs of administration, fate of drugs, adverse drug reaction, drug interaction and bio-transmission.
CO-2 Pharmacology of peripheral & central nervous system at the cellular level.
CO-3 Screening and different techniques of testing of drugs.
CO-4 Evaluation of toxicity of drugs.

Course-43: PT-509 (Pharm Microbiology)

After the completion of the course, students will get the knowledge on:
CO-1 Classification, structure, growth, cultivation, isolation and identification of microorganisms.
CO-2 Methods of disinfection & sterilization as well as their evaluation.
CO-3 Immunity, defensive mechanism of human body and microbial resistance of drugs.
CO-4 Microbial assay of antibiotics and vitamins, and water analysis.
CO-5 Common infectious diseases, disease producing organisms, their treatment and control.

Course-44: PT-503 (Pharm Chemistry- Medicinal Chemistry)

CO-1 Students will be able to acquire knowledge on basic principle of Physico- chemical aspects of drug molecules & their biological action.
CO-2 Students will be able to understand the synthetic procedures, mode of action, uses, structure activity relationship including physic-chemical properties of selected class of drugs acting at synaptic and neuro-effector junction sites.
CO-3 Students will be able to understand the concept of QSAR & receptor based drug design of selected drugs.
CO-4 Students will be able to acquire the knowledge on mode of action, uses & structure activity relationship of selected class of drugs like autocoids and oxytocics .

Course-45: PT-507 (Pharm Engineering)

CO-1 Students will learn theory and principles of mass transfer and its application in pharmaceutical operations.
CO-2 Students will learn the principles of pharmaceutical manufacturing operations like distillation, extraction, drying, humidification, refrigeration and necessary equipments used in those operations.
CO-3 Students will acquire the concept of basic instrumentation, automatic process control system used in pharmaceutical industries.

Course-46: PT-504 (Pharm Chemistry – Biochemistry)

CO-1 Students will learn the structure, physical properties & molecules, biology of hormones, vitamins & neuclic acid including their bio synthesis.
CO-2 Students will acquire knowledge about nitrogen balance, bio-synthesis and metabolism of amino acids, Urea cycle and metabolic disorder of urea cycle.

CO-3 Students will acquire concept of protein synthesis, genetic code and regulation of gene expression and polymerase chain reaction.
CO-4 Students will learn bio-synthesis of nucleic acids and its replication, mutation and repair.

Course-47: PT-596 (Pharmaceutics – Pharm Tech-II Lab)

CO-1 Students will be able to formulate various types of cosmetics for skin, hair and eye.
CO-2 Students will learn preparation, evaluation and packaging of tablets.
CO-3 Students will be able to prepare and evaluate the quality of hard gelatin capsules.

Course-48: PT- 597(Pharm Engineering Lab)

CO-1 Students will practice experiments on measurement of flow of fluids, determination of Reynold's number and calculation of frictional losses.
CO-2 Students will learn to perform experiments on determination of humidity, rate of evaporation, rate drying and rate of filtration.
CO-3 Students will learn to determine free and bound moisture content.

Course-49: PT-599 (Pharm Microbiology Lab)

CO-1 Students will learn to prepare various types of culture media,
CO-2 Students will learn sterilization techniques & its validation.
CO-3 Students will learn isolation & identification of microorganisms.
CO-4 Students will also learn sterility testing & microbial assay of antibiotics.

Course-50: PT-593 (Pharm Chemistry – Medicinal Chemistry Lab)

CO-1 Students will learn to synthesis of some selected drugs & evaluate as per pharmacopeal monograph.
CO-2 Students will learn special analytical procedure of some specified drugs.

Course-51: PT-603 (Pharm Chemistry – Medicinal Chemistry)

CO-1 Students will be able to understand the Synthetic procedure of selected class of drugs acting on the Central Nervous System, diuretics and Cardiovascular drugs.
CO-2 Students will be able to acquire the knowledge of mode of action, uses & structure activity relationship of selected class of drugs acting on the Central Nervous System, diuretics and Cardiovascular drugs.
CO-3 Students will be able to understand the Steroidal Nomenclature, and stereochemistry of important class of steroids.
CO-4 Student will be able to acquire the concept on general identification test, determination of functional group and structure elucidation of selected alkaloids.

Course-52: PT-606 (Pharmaceutics – Pharm Tech)

CO-1 Students will learn pre-formulation, formulation, manufacturing & quality evaluation methods of parenteral and surgical products.
CO-2 Students will gain knowledge about components, types, specifications and methods of evaluation of packaging of pharmaceutical products.
CO-3 Students will learn method of preparation & evaluation of novel drug delivery system with special emphasis to microcapsule, micropellet parenteral, implantable and transdermal therapeutic system.

Course-53: PT-611 (Pharmaceutics – Bio pharmaceutics & Pharmokinetics)

After completion of the course
CO-1 Students will be able to explain passage of drugs across biological barrier and its distribution in the body.
CO-2 Students will be able to explain basics of compartment modeling and measurement of Pharmacokinetic parameters as well as pharmacokinetics.
CO-3 Students will be able to explain bioavailability and bioequivalence.
CO-4 Students will learn calculation for dosage adjustments based on renal and billiary clearance.

Course-54: PT-608 (Pharmacology)

After completion of the course a student will
CO-1 Learn pharmacology of drugs acting on cardiovascular, haemopoietic, respiratory and urinary systems.
CO-2 Gain knowledge on bioassay, its merits and demerits, threshold dose bracketing etc.
CO-3 Gain knowledge on autacoids like Histamine, 5-HT, antagonists, Prostaglandins, thromboxanes etc.

Course-55: PT-609 (Pharmaceutical Biotechnology & Industrial Microbiology)

Students will learn
CO-1 Immunology and immunological preparations.
CO-2 To recognize different genetic recombination processes and recombinant drugs.
CO-3 About the fermentation technology (industrial production of antibiotics, vitamins).
CO-4 Microbial transformation & enzyme immobilization.

Course-56: PT- 610B (Advanced Pharmaceutical Biotechnology)

CO-1 Students will learn the Pharmaceutical Biotechnology in details (eg. rDNA technology, PCR, production of vitamins, amino acids, steroids, natural products etc).
CO-2 Students will acquire knowledge on micro- and nanotechnology , plant tissue culture , cell culture, gene cloning , production and application of transgenic animals,
CO-3 Students will learn a brief aspect of the ethical and social issues associated to gene cloning.

Course-57: PT-693 (Pharm Chemistry – Medicinal Chemistry Lab)

Students will learn
CO-1 Use of stereomodels on selected drugs.
CO-2 Synthesis and identification of some selected compounds like Benzil, Diphenyl hydantoin, Benzocaine etc.
CO-3 Instrumental techniques for the assay of some selected drug formulations.

Course-58: PT-696 (Pharmaceutics – Pharm Tech Lab)

CO-1 Students will learn preparation and evaluation of sustained release oral dosage form.
CO-2 Students will gain knowledge on evaluation of pharmaceutical packaging materials.
CO-3 Students will learn on surgical dressings.

Course-59: PT-697(Pharmaceutics – Biopharmaceutics & Pharmacokinetics Lab)

CO-1 Students will perform in-vitro experiments on dissolution testing for selected drugs.
CO-2 Students will learn analysis of biological specifications for drug content.
CO-3 Students will learn to analyze and interpret data (given) for absorption, distribution and excretion of drugs.

Course-60: PT-698 (Pharmacology Lab)

CO-1 Students will learn to study different routes of administration of drugs in mice/rats.
CO-2 Students will learn recording of anticonvulsant, inflammatory, muscle relaxant and spontaneous motor activity of drugs.
CO-3 Students will learn to study effects of various agonists and antagonists, and their characterization using isolated preparations.

Course-61: PT-691B (Advanced Pharm Biotechnology Lab)

Students will learn to study
CO-1 Protein separation by gel electrophoresis.
CO-2 Preparation of animal tissue sections for histological study.
CO-3 Spetrophotometric assay of enzymes.
CO-4 Students will be able to estimate Serum Glutamate Oxaloacetate Transaminase(SGOT), Serum Glutamate Pyruvate Transaminase(SGPT) test.

Course-62 PT-682 (Seminar)

Students will learn:
CO-1 How to present an idea or concept to an audience.
CO-2 Learn to cultivate communication skill and take active part in interaction.

Course-63: PT-706 (Pharmaceutics – Pharm Tech)

CO-1 Students will be able to demonstrate theoretical concepts on pre-formulation (stability, bioavailability)
CO-2 Students will be able to apply specific analytical methods to solve formulation development problems.
CO-3 Students will learn in-vitro dissolution study and interpret performance evaluation problems of dosage forms.
CO-4 Students will understand the formulation concepts of production and evaluation of oral controlled released formulations.
CO-5 Students will be able to discuss the basic concepts on GMP, quality assurance and quality audit.

Course-64: PT-703(Pharm Chemistry – Medicinal Chemistry)

CO-1 Students will acquire knowledge on structure, synthesis, uses and mode of action of selected antibiotics and chemotherapeutic agents like β-lactum antibiotics, chloramphenicol, antiviral, antitubercular drugs etc.

CO-2 Students will acquire knowledge on structure, synthesis, uses and mode of action of antineoplastic agents.

CO-3 Students will acquire knowledge on structure, synthesis, uses and mode of action of Thyriod, anti-thyroid drugs, insulins etc.

Course-65: PT-702 ({Pharmacognosy)

Students will get the knowledge

CO-1 About the cultivation, collection, identification and preservation of important medicinal plants and herbs.

CO-2 On biogenesis, pharmacological activity & screening of medicinally important plant metabolites.

CO-3 On concept about marine pharmacognosy & tissue culture.

CO-4 On herbal cosmetics.

Course-66: PT-708 (Pharmacology)

CO-1 Students will learn the pharmacology of chemotherapeutic agents.

CO-2 Students will learn pharmacology & therapeutic uses of various hormones.

CO-3 They will learn pharmacology of drugs acting on gastro-intestinal tract.

CO-4 They will also gather knowledge on pharmacology of drugs acting on uterus.

Course-67: PT-709A (Packaging Technology)

CO-1 Students will learn details of pharmaceutical packaging, regulatory requirements, various materials of packaging used for different dosage forms.

CO-2 Students will also learn quality control, method of evaluation of packaging material and design for disposability.

CO-3 Students will acquire basic concept regarding influence of packaging components on dosage form stability.

Course-68: PT-709B (Advanced Pharmacognosy)

After completion of the course, students will learn

CO-1 About indigenous system of medicines with emphasis on ayurveda.

CO-2 About procedure of extraction, pharmacological screening, quality assurance & stability testing of herbal drugs.

CO-3 About important techniques associated with quality control of herbal drugs.

Course-69: PT-709C (Pharm Marketing Management)

CO-1 Students will acquire basic concept of pharmaceutical marketing management including strategic planning, demand analysis and self life management of pharmaceutical products.

CO-2 Students will learn brand development including design of packaging, advertising, sales promotion and sales force management.

CO-3 Students will gain the basic idea of managing retail, wholesale and market logistics.

Course-70: PT-796(Pharmaceutics – Pharm Tech Lab)

CO-1 Students will learn to perform experiments on dissolution testing and data evaluation for oral and solid dosage forms.

CO-2 Students will learn to design controlled release formulations.

CO-3 Students will be able to develop and evaluate controlled release formulations.

Course-71: PT-793 (Pharm Chemistry – Medicinal Chemistry Lab)

CO-1 Students will learn to perform synthesis on lab scale of selected drugs like sulphacetamide, Para amino benzoic acid, isonicotinic acid etc..

CO-2 Students will be able to perform pharmacopeal assay on selected drug formulations like Trimethoprim, Chlorpropamine, albendazole etc..

Course-72: PT-783 (Project)

CO-1 Students in small groups will learn to design, undertake and perform research work relevant to the pharmaceutical field.

Course-73: PT-782 (Seminar on Assigned Topic)

Students will learn

CO-1 How to present an idea or concept to an audience.

CO-2 Learn to cultivate communication skill and take active part in interaction.

Course-74: PT-812 (Pharm Industrial Management)

CO-1 Students will learn basic principles of management, accountancy, economics and pharmaceutical marketing.

CO-2 Students will also develop brief idea about material management, personnel management, production management.

CO-3 Students will learn basic concept of Total Quality Management (TQM), Good Laboratory Practice (GLP) and ISO9000.

Course-75: PT-813 (Pharm Jurisprudence & Ethics)

CO-1 Students will learn a brief review of pharmaceutical legislation with details of Drugs & Cosmetics Act & Rules, Pharmacy Act & Pharmaceutical Ethics.

CO-2 Students will gain basic idea about selected regulatory provisions related to pharmaceuticals & cosmetics.

CO-3 Students will also gather knowledge on Patents Act and Factories act.

Course-76: PT-818 (Hospital Pharmacy & Clinical Pharmacy)

CO-1 Students will learn basic concept of pharmacotherapy, essential drugs & rational use of drugs, clinical trial & it's monitoring.

CO-2 Students will acquire basic concept about organization & structure of hospital pharmacy, drug distribution system.

CO-3 They will also learn manufacturing of sterile & non-sterile products, preparation & maintenance of hospital pharmacy & other records.

Course-77: PT-801 (Pharmaceutical Analysis)

CO-1 Students will learn the theoretical aspects of basic instrumentation of selected advance analytical techniques like UV-visible spectrophotometry, Infrared spectrometry (IR), Nuclear Magnetic Resonance Spectroscopy (NMR), Mass spectrometry (MS) etc.

CO-2 Students will learn spectral data interpretation.

CO-3 Students will also learn advance analytical techniques like radio immune-assay (RIA).

Course-78: PT-891(Pharmaceutical Analysis Lab)

CO-1 Students will learn estimation of various formulations using selected advance instrumental techniques.

CO-2 Students will learn estimation of metal ion elements like Na^+, K^+, and Ca^+ etc. using Flame photometer.

Course-79: PT-884 (VIVA-VOCE)

CO-1 Students should be able to communicate clearly, confidently with one or many listeners , organizing their ideas and fundamentals of knowledge – logically on any particular topic .

Programme Outcome (POs)

1. Ability to acquire knowledge of multi disciplinary Pharmaceutical and Bio Medical Sciences.

2. Ability to perform experiments, analyze & interpret results.

3. Ability to plan project work, assignments, seminars including time and resource management within realistic constraint.

4. Ability to function in teams with motivation and leadership approach.

5. Ability to identify the role as pharmaceutical technologist & health care professional; and communicate its importance to society.

6. An understanding of professional, societal and legal responsibility related to Pharmaceutical Industry & pharmacy practice.

7. An understanding of the impact of pharmacy profession in environment & societal context and demonstrate the need for sustainability.

8. Develop ethical responsibility and values in communication & lifestyle.

9. An ability to communicate effectively.

10. An ability to use advanced analytical techniques, skills and modern operating tools necessary in pharmacy profession.

11. Recognize the need for and an ability to engage in lifelong learning.

2.1.2 State how and where the POs are published and disseminated (3) Institute Marks 3.00

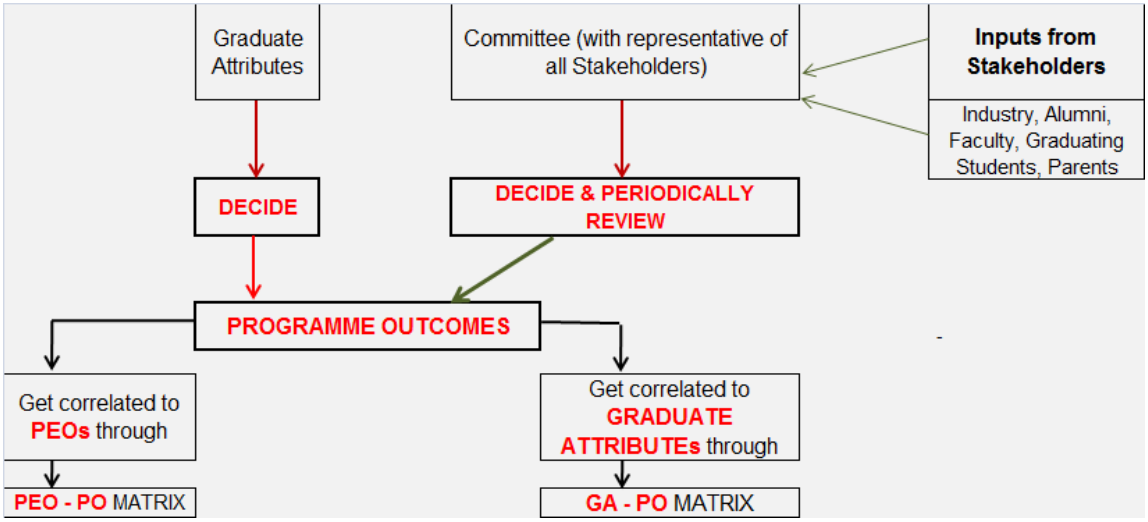
(Describe in which media, e.g. websites, curricula books, the POs are published and how these are disseminated among stakeholders.)

- Published on the college page of Institute website and can be accessed through www.nshm.com/colleges/college-of-pharmaceutical-technology.
- Published on College Notice Boards.
- Departmental Seminar Room and Laboratories.

2.1.3 Indicate the processes employed for defining of the POs (5) Institute Marks 4.00

(Describe the process that periodically documents and demonstrates that the POs are defined in alignment with the graduate attributes prescribed by the NBA.)

The defined mandatory Graduate Attributes (GAs) have been taken from the NBA guidelines manual and considering these in coordination with Programme Educational Objectives(PEOs), the Departmental NBA core committee developed the Programme Outcomes (POs) on the basis of feedback from stakeholders like students, industry representatives, alumni, parents, faculty members as well as graduating students. These were then passed on to the faculty members of the department. Based on the feedback received from faculty members & feedback forms, POs were put up in the Board of Studies (BOS) & Governing Body (GB) members for the approval and revision.



2.1.4 Indicate how the defined POs are aligned to the Graduate Attributes prescribed by the NBA (5) Institute Marks 4.00

(Indicate how the POs defined for the programme are aligned with the Graduate Attributes of NBA as articulated in the accreditation manual.)

The POs are constrained so that they satisfy the requirements of undergraduate students. Graduates will be able to demonstrate knowledge of sufficient depth. The PO's are defined in such a way to that it demonstrate the followings :

Graduate will be able to communicate effectively.

Graduates will be able to demonstrate a global perspective and intercultural competence in their professional lives.

Graduates will have developed competencies in Computer literacy.

Graduates will be effective problem-solvers, capable of applying logical, critical and creative thinking to a range of problems

Graduates will be encouraged to ethical action and social responsibility.

Graduates will be prepared for lifelong learning in pursuit of personal and professional development.

	Graduate Attributes	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
1	Pharmacy knowledge	X	X	X							X	X
2	Thinking abilities		X	X					X			
3	Planning abilities		X	X			X					
4	Leadership skills				X		X					
5	Professional identity					X	X					X
6	Pharmacist & the Socieity						X					
7	Enviromental sustainability							X				
8	Ethics						X		X			
9	Communications				X					X		
10	Modern tool uses		X								X	X
11	Lifelong Learning											X

2.1.5 Establish the correlation between the POs and the PEOs (10) Institute Marks 9.00

(Explain how the defined POs of the programme correlate with the PEOs.)

As the programme outcomes are expected to attain by the time of graduation and PEOs are expected to attain few years after graduation, they have as many contributions as shown in Table. In this table, the letters "L", "M", "H" indicate low, medium and high correlations of the Programme Outcome with the PEO and a blank indicates absence of correlation.

H- High, M- Medium, L- Low.

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
PEO-1 Established themselves as successful professionals in the profession of pharmacy with confidence and global competitiveness and made intellectual contributions to it.	**H**		**M**	**H**	**H**	**L**		**M**	**H**		
PEO-2 Carried out advanced studies and acquired higher qualifications applying his or her knowledge and experience towards an advanced professional degree.	**H**	**M**	**M**				**M**		**M**	**H**	**H**
PEO-3 Attained capabilities as successful team members using effective communications and teamwork skills.				**H**	**H**	**H**		**M**	**H**		
PEO-4 Pursued a career for life-long learning with personal & professional growth, superior work ethics and character	**M**	**H**	**H**	**M**	**H**	**M**	**H**	**H**	**L**		**H**

2.2 Attainment of Programme Outcomes (40) Total Marks 35.00

2.2.1 Illustrate how course outcomes contribute to the POs (10) Institute Marks 9.00

(Provide the correlation between the course outcomes and the programme outcomes. The strength of the correlation may also be indicated.)

The syllabus of UG programme is framed by West Bengal University of Technology (presently renamed as Maulana Abul Kalam Azad University of Technology) and revised in 2008 by taking feedback from different pharmacy colleges. Subsequently the university constituted board of studies incorporating programme specific criteria on the basis of recommendation of invited faculty members from our institute. The course outcome and programme outcome have been defined accordingly based on the course credits which are broadly fixed on the following norms in the syllabus:

- Lectures – 1 lecture period / week is assigned 1 credit
- Tutorials – 1 tutorial period / week is assigned 1 credit
- Practical – 3 practical periods / week is assigned 2 credit
- Seminar / Project have been assigned 2 credit each
- Major project have 6 credit

Each course is designed so that course outcome contributes to the attainment of PO's. Different courses emphasize on contribution to different PO's leading to eventual attainment of PO's upon successful completion of all courses and hence the programme. Each course has sufficient weightage to fundamental concepts, tools and techniques and emphasis on practical implementations. This provides a strong correlation between the course outcomes and programme outcomes, developing necessary skills in students, making them proficient pharmaceutical professional.

The linkage among programme outcomes and course outcomes is shown in Table below, "X" indicates linkage. The course outcomes are thus directly and quantitatively assessed, and are tied to the programme outcomes.

Course Title	Course Code	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11
Mathematics	M-103, M-203	X	X								X	
Computer Application	CS-303, CS-393, PT-610A, PT- 691A	X								X		X
Humanities	HU-101									X		
Environment & Ecology	HU-202							X				
Biology	PTB-101, PTB-191	X					X					
Anatomy, Physiology & Health Education	PT-205, PT-295,, PT-305, PT- 405	X						X				
Chemistry	PT-103, PT-193, PT-204, PT-294, PT-203, PT-293,		X	X	X			X				

	PT-304, PT-394											
Pharm Engineering	PT- 307, PT-397, PT-407, PT-497, PT-507, PT-597	X	X	X	X	X						
Biochemistry	PT-404, PT-494, PT-504	X	X	X	X							
Microbiology & Biotechnology	PT-509, PT-599, PT-609, PT-610B, PT-691B	X	X	X	X			X				X
Pharm Analysis	PT-101, PT-191, PT-301, PT-391, PT-801, PT-891	X	X	X	X	X					X	X
Medicinal Chemistry	PT-503, PT- 593, PT-603, PT-693, PT-703, PT-793	X	X	X	X			X				X
Pharmacognosy	PT-202, PT-292, PT-402, PT-492, PT-702, PT-709B	X	X	X	X							
Pharm Technology	PT-106, PT-196, PT-306,PT-396, PT-406, PT-496, PT-506, PT- 596, PT-606, PT-696, PT-611, PT-697	X	X	X	X	X	X		X			X
Pharmacology	PT-508, PT-608, PT-698, PT-708	X	X	X	X		X					X
Hospital Pharmacy & Clinical Pharmacy	PT-818	X				X	X	X	X			X
Pharm Management	PT-812, PT-709C	X				X						X
Pharm Jurisprudence & Ethics	PT-813	X							X			
Communication & Professional skills	PT-782, PT-783, PT-682, PT-884			X	X					X		X

2.2.2 Explain how modes of delivery of courses help in attainment of the POs (10) Institute Marks 9.00

(Describe the different course delivery methods/modes, e.g. lecture interspersed with discussion, asynchronous mode of interaction, group discussion, project etc., used to deliver the courses and justify the effectiveness of these methods for the attainment of the POs. This may be further justified using the indirect assessment methods such as course-end surveys.)

Following are the Course Delivery methods used in the department:

- Lectures
- Tutorials
- Classes with Power Point Presentation
- Demonstration of laboratory experiments
- Handling of instruments / Laboratory equipments / animals
- Group task through assignment
- Projects & Presentation of Research / review activity
- Distribution of Hand-outs & Lecture notes

H- High, M- Medium, L- Low.

Course Delivery methods	**PO-1**	**PO-2**	**PO-3**	**PO-4**	**PO-5**	**PO-6**	**PO-7**	**PO-8**	**PO-9**	**PO-10**
Lectures	H					H			H	
Tutorials	H	H							M	
Classes with Power Point Presentation	H								H	H
Demonstration of laboratory experiments	H	H	H	L						H
Handling of instruments / Laboratory equipments / animals	H	M	M							H
Group task through assignment	M		M	M						

Distribution of Hand-outs & Lecture notes	M	L				L				

2.2.3 Indicate how assessment tools used to assess the impact of delivery of course/course content contribute towards the attainment of course outcomes/programme outcomes (10)

Institute Marks 9.00

(Describe different types of course assessment and evaluation methods, both direct and indirect, in practice and their relevance towards the attainment of the POs.)

Direct assessment tool which uses class performance and examine result (theory plus practical marks) are mapped with the POs. In the indirect assessment feedback from alumni employers, graduate exit survey and extra academic activity of students have been consider with an equal weightage for the calculation. In the overall attainments a weightage of 60% given to direct assessment while 40% is assigned to indirect assessment.

Performance indicators	% Weightage	Assement tool	Completely Attained [3]	Attained [2]	Partially Attained [1]
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance	At least 75% of stdents Achieved High Competence level (>7 Grade Pt in 10 Pt scale) in Final Umiversity examination	At leasr 60% of stdents Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale) in Final Umiversity examination	At least 50% of stdents Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale) in Final Umiversity examination
		Performance in Practical Lab, Project work	At least 75% of stdents Achieved High Competence level (>7 Grade Pt in 10 Pt scale) in Practical Lab, Project work	At leasr 60% of stdents Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale) in Practical Lab, Project work	At least 50% of stdents Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale) in Practical Lab, Project work
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	At least 80% of the graduates are working in technical or professional carrers or got enrolled for higher studies	At least 70% of the graduates are working in technical or professional carrers or got enrolled for higher studies	At least 60% of the graduates are working in technical or professional carrers or got enrolled for higher studies
	(5% WEIGHTAGE)	Higher Studies record	At least 30% of the students go for higher studies	At least 20% of the students go for higher studies	less than 10% of the students go for higher studies
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	More than 20% of the students succeed in GPAT / Other competetive exams	At least 10% to 20% of the students succeed in GPAT / Other competetive exams	less than 10% of the students succeed in GPAT / Other competetive exams
	(10% WEIGHTAGE)	Exit survey feedback	Average assessment score of survey report is > 4.0	Average assessment score of survey report is between 3.01 to 3.99	Average assessment score of survey report is < 3.0
	(10% WEIGHTAGE)	Alumni Feedback	Average assessment score of survey report is > 4.0	Average assessment score of survey report is between 3.01 to 3.99	Average assessment score of survey report is < 3.0

Evidences:

• Internal and external exam papers for these courses are available in examination section.

• Samples copies of Project are available in the department Library.

• Annual report of the department for co-curricular activities and competitive exams data which was placed in department office.

• Exit survey, Alumni and Employer Survey documents files are available in the department office.

The UG programme in pharmacy is on semester based evaluation system consisting of 30% internal marks and 70% marks in university examination (theory) and 40% marks in sessional laboratory experiment (practicals) and 60% marks in final university marks (practicals).

The assessment is based on continuous evaluation throughout the semester as follows:

- **Course work:**
- Tutorials, problem solving, group discussion and home assignments
- **Sessional examination (theory):** two numbers class tests/sessional examination are conducted; one at the end of 4 to 5 weeks another at the end of 12 to 13 weeks of semester classes.
- **Sessional examination (practical):** Routine laboratory experiments are evaluated on the basis of continuous student performances & practical records are evaluated. Marks are allocated based on daily performance & viva-vice for the entire semester practical classes.
- **End semester examination:** conducted by university at the end of every semester.

Evaluation of assessment of the course is observed through a grading system after end of every semester SGPA allocated and after every year YGPA is allocated. Finally grading is awarded as DGPA (cumulative grade point average).

Category	Grade	% Marks range	Points
Out standing	O	100 - 90	10
Excellent	E	89 - 80	9
Very Good	A	79 - 70	8
Good	B	69 - 60	7
Fair	C	59 - 50	6
Below Avg.	D	49 - 40	5
Fail	F	Below 40%	2

2.2.4 Indicate the extent to which the laboratory and project course work are contributing towards attainment of the POs (10) Institute Marks 8.00

(Justify the balance between theory and practical for the attainment of the POs . Justify how the various project works, a sample of 20% best and average projects from total projects, carried as part of the programme curriculum contribute towards the attainment of the POs.)

The Practical laboratory experiments are conducted in a way where the student would apply the basic knowledge and he/she is asked to perform the experiment either individually or in a group and interprete/analyze the results. Students are adviced to design and carry out the experiments in various lab courses in the program curriculum. The student estimates the basic materials and methodology needed to get the desired output, identify variables required and performs the experiment. Faculty provides guidance about the experimental findings, from which student analyzes the data, discuss possible reasons for deviations between predicted and measured results from an experiment.

From the lab courses, this outcome is assessed with student abilities in design, test analytical and experimental solutions. The evaluation is done based on how the student designed solution for a given problem and draw conclusions from a range of results. However, the design of experiments, a very high-level skill, requires several opportunities for practice and a variety of laboratory experiments. Hence, in our courses we are trying to have more open-ended experiments.

In summary, considering the various courses of the program it is evident that the student is able to design and conduct experiments, as well as to acquire all the higher level of practical skills.

Weightage of Theories & Practicals

Semester	Contact Hours		Credit Points		%age of Contact Hours		%age of Credit Points	
	Theory (L+T)	Practical	Theory	Practical	Theory	Practical	Theory	Practical
I	16	12	16	8	57.14	42.86	66.67	33.33
II	21	12	21	8	63.64	36.36	72.41	27.59
III	23	15	23	10	60.53	39.47	69.70	30.30
IV	20	12	20	8	62.50	37.50	71.43	28.57
V	20	12	20	8	62.50	37.50	71.43	28.57
VI	20	12	20	8	62.50	37.50	71.43	28.57
VII	15	6	15	4	71.43	28.57	78.95	21.05
VIII	12	3	12	2	80.00	20.00	85.71	14.29
Projects/Seminars	20	0	16	0	100.00	0.00	100.00	0.00
Total	167	84	163	56	66.53	33.47	74.43	25.57

ATTAINMENT OF POs THROUGH LABORATORY & PROJECT WORK				Strong	S		Moderate	M
Sl No	Course Code	Laboratory Name	Area / Theme / Relevance	PO	% of Students achieved high competence level (≥7 Grade Pt in 10 Pt scale)			Attainment Level
					2012-13	2013-14	2014-15	
1	PT 191	PHARMACEUTICAL ANALYSIS Lab	Basic quantitative Chemical Analysis -Titrimetric / Gravimetric	2,4	100	100	100	S
2	PT 196	PHARMACEUTICS (DISPENSING PHARMACY) Lab	Compounding and dispensing of different categories of medicinal products	2,4,8	98.3	98.1	98.1	S
3	PT 193	PHARMACEUTICAL CHEMISTRY Lab	Qualitative analysis of inorganic compounds/salts	2,4	97.3	97.4	97.3	S
4	PTB 191	REMEDIAL BIOLOGY Lab	Identification & morphological study of different parts of plants	2,4	99.3	99.2	99.0	S
5	PT-292	PHARMACOGNOSY Lab	Crude drugs - morphology, identification, physical/chemical tests	2,4	92.7	92.8	92.3	S
6	PT-293	PHARMACEUTICAL CHEMISTRY (PHYSICAL CHEMISTRY) Lab	Study & determination of basic physico -chemical properties of liquids/drugs	2,4	96.3	96.4	96.8	S
7	PT-294	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY) Lab	Basic techniques of identification & synthesis of organic compounds	2,4	94.3	95.4	95.3	S
8	PT-295	PHYSIOLOGY Lab	Idenntification of organs & skeleton, basic hematology tests, handling of lab animals	2,4	97.7	97.8	98.0	S
9	PT 394	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY) Lab	Synthesis of various compounds containing heterocyclic ring systems. computational techniques ;electrophilic aromatic substitutions	2,4	97.0	97.2	96.5	S
10	PT 391	PHARMACEUTICAL ANALYSIS Lab	Advance titrimetric methos-non aquous, complexometic, diazo, Karl Fischer etc. TLC techniques.	2,4,10	93.3	92.8	93.7	S
11	PT 396	PHAMACEUTICS (PHYSICAL PHARMACY) Lab	Charecterisation of powders; study of emulsion/suspention/colloidal system.	2,4	92.3	91.8	92.0	S

12	PT 397	ENGINEERING DRAWING Lab	Convention of Eng. Drawing; basic orthographic projections	2	96.3	96.0	99.0	S
13	CS 393	BASIC ELECTRONICS & COMPUTER APPLICATION Lab	MS-DOS application, basic programming using C language	2,4,10	98.7	98.6	98.4	S
14	PT-492	PHARMACOGNOSY Lab	Microscopic study of powdered crude drugs; isolation,purification identification of diff. chemical groups present in crude drugs	2,4	100.0	100.0	100.0	S
15	PT-494	PHARMACEUTICAL CHEMISTRY (BIO-CHEMISTRY) Lab	Gen. identification of carbohydrates, lipids, proteins & amino acids - also in natural food.	2,4	98.0	97.6	98.3	S
16	PT-496	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-I) Lab	Preparation & evaluation of liquid oral dosage forms, suppositories, eye drops and creams; extraction techniques	2,4,10	94.7	95.1	95.3	S
17	PT-497	PHARMACEUTICAL ENGINEERING Lab	Basic experiments on size reduction, size separation, evaporation, crystallization, heat transfer and filtration.	2,4,10	99.7	99.8	99.7	S
18	PT 596	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-II) Lab	Preparation & evaluation of cosmetics for skin,hair,eye; and Tablets	2,4,10	98.7	98.8	98.7	S
19	PT 597	PHARMACEUTICAL ENGINEERING Lab	Experiments on fluid flow, RH, rate of evaporation/drying	2,4,10	99.3	99.5	99.4	S
20	PT 599	PHARMACEUTICAL MICRO-BIOLOGY Lab	Basic microbiological techniques-prpn of culture media, sterilization, isolation of Bacteria, microbial assay	2,4,6,8	99.7	99.7	99.7	S
21	PT 593	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY) Lab	Synthesis of selected drugs & their evaluation .	2,4,10	98.0	98.4	98.1	S
22	PT-691B	ELECTIVE-I Lab (COMPUTER APPLICATION IN PHARMACEUTICAL TECHNOLOGY/ADVANCED BIO-TECHNOLOGY)	Separation of protein by gel electrophoresis, Spetrophotometric assay of enzyme, SGPT SGPT Test.	2,6,10,11	97.7	97.9	97.4	S
23	PT-693	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY) Lab	Synthesis & identification of some selected compounds eg, Benzil, Diphenyl hydantoin, Benzocaine etc	2,4,10	97.3	97.6	97.4	S
24	PT-696	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY) Lab	Evaluation of pharmaceutical packaging materials; preparation and evaluation of sustained release oral dosage form	2,4,10,11	97.4	97.9	97.7	S
25	PT-697	PHARMACUTICS (BIO-PHARMACEUTICS & PHARMACOKINETICS) Lab	Experiments on dissolution testing for selected drugs; Data analysis for ADE.	2,4,10,11	96.9	97.5	97.6	S
26	PT-698	PHARMACOLOGY Lab	Expt. On analgesic, inflammatory, muscle relaxant and spontaneous motor activity of drugs.	2,4,5,8	99.3	99.5	99.4	S
27	PT 796	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY) LAB	Experiments on dissolution testing and data evaluation for oral and solid dosage forms; Formulate and evaluate controlled release formulations	2,4,10,11	94.0	93.4	93.6	S
28	PT 793	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY) LAB	Synthesis on lab scale of selected drugs like sulphacetamide, Para amino benzoic acid, isonicotinic acid	2,4,10,11	99.4	99.2	99.4	S
29	PT 891	PHARMACEUTICAL ANALYSIS Lab	Estimation of various formulations using selected advance instrumental techniques	2,4,10,11	99.1	98.8	99.1	S

PROJECT & SEMINAR

Sl No	Course Code	Laboratory Name	Area / Theme / Relevance	PO	% of Students achieved high competence level (≥7 Grade Pt in 10 Pt scale)			Attainment Level
					2012-13	2013-14	2014-15	
1	PT 682	SEMINAR	Presenting an idea, communication & interaction skill	3,9	86.3	86.3	86.3	S
2	PT 782	SEMINAR ON ASSIGNED TOPIC	Literature search, presentation, communication & interaction skill	3,9	100.0	100.0	100.0	S
3	PT 783	PROJECT	Design, undertake & perform a project- teamwork skill	2,3,4,9	99.3	99.3	99.3	S

4	PT 884	VIVA-VOCE	Application of knowledge, reasoning power & communication skill	1,9	99.3	99.2	99.5	S

2.3 Assessment of the attainment of the Programme Outcomes (125) Total Marks 102.00

2.3.1 Describe assessment tools and processes used for assessing the attainment of each PO (25) Institute Marks 22.00

Describe the assessment process that periodically documents and demonstrates the degree to which the Programme Outcomes are attained. Also, include information on:
a) A listing and description of the assessment processes used to gather the data upon which the evaluation of each the programme educational objective is based. Examples of data collection processes may include, but are not limited to, specific exam questions, student portfolios, internally developed assessment exams, senior project presentations, nationally-normed exams, oral exams, focus groups, industrial advisory committee;
b) The frequency with which these assessment processes are carried out.

Weightage of Direct Assessment Tools					
Assessments/Pos		Frequency/Sem	Theory Courses	Practical courses	Final University Exam.
Written Examination	Sessional - I	1	10%		
	Sessional - II	1	10%		
	Assignment	1	10%		
	End Semester	1			70%
Practical Examination (Experiments Practical records and Voiva-voce)	Sessional, Performance & Viva-voce	Continuous		40%	60%
Project, Seminer		1			100%

Direct Assessment Tools: Evaluation of Attainment of POs for direct assessment tool is carried out as follows:

- Grades are decided based on cumulative scores of above examination
- Students are shown their answer sheet for sessional examination and solutions are discussed in the class. Evaluations of sessional class test records are maintained by respective class teacher. The final consolidated records are maintained by examination cell.
- Routine laboratory experiments are evaluated on the basis of continuous student's performances and practical record are evaluated. Marks are allocated based on daily performance and viva-voce for the entire session. The project and the seminar offered to students are evaluated by internal faculty mentor as well as by external examiner.
- For direct assessment the course performance & the performance in practical lab, project work/ seminars have been categorized in three groups:
  - COMPLETELY ATTAINED (SCORE=3): Atleast 75% of the students achieved high competence level (≥7 grade points in 10 point scale).
  - ATTAINED (SCORE=2): Atleast 60% of the students achieved moderate competence level (<7 & ≥ 6 grade points in 10 point scale).
  - PARTIALLY ATTAINED (SCORE=1): Atleast 50% of the students achieved average competence level (<6 grade points in 10 point scale).

Indirect Assessment Tools:

- **Graduate Exit Feedback:** In the last semester i.e. 8th semester, feedback is taken by the student of last year. Achievement of POs and graduate attributes (GA) are taken as criteria in the feedback.
- **Alumni Feedback:** Alumni, particularly who has graduated within the 3-4 years of current academic year, feedback is taken with reference to the achievement of POs.
- **Placement & training Feedback:** Students who has undergone vocational/summer training and internship in the industries as well as who got the jobs in the industries. Placement feedback data is analyzed for attainment of POs. A verbal feedback is taken from industry persons when our faculty meets them at any conference or when they come to our institute for giving lectures or training.
- **Higher studies:** No. of students opting for higher studies like M.Pharm. , MBA, M. Tech are taken into consideration.
- **Internationally/ Nationally competetive Examination:** In this component, various examinations (national and international level) like PGET, GATE, GPAT, CAT, JEMAT, GRE, NIPER, BITS are taken in to consideration for students performance and evaluation.
- **Attainment of POs:**

  In the feedback form, grading is given. Students/Alumni fill the form as per grading system.

  Average of these grades are calculated and taken as basis for evaluation of attainment of POs.

  In competetive examinations, percentage of students qualified out of total number of students appeared is considered for evaluation of attainment of POs.

  Student's achievements in beyond curriculum (like poster/oral presentation in conferences, seminars, debates, scholarships, sports achievements) are also considered.

  In the attainment of POs, all the mentioned tools are used for evaluation of attainment of POs.

Category	Grade	% weightage
High competency level	O, E, A, B	(≥7 grade points in 10 point scale)
Moderate competency level	C	(<7 & ≥ 6 grade points in 10 point scale)
Average competency level	D &Below	(<6 grade points in 10 point scale).

Since all the COs is mapped with POs achievement are calculated by weighted average method.

Performance indicators	% Weightage	Assement tool	Completely Attained [3]	Attained [2]	Partially Attained [1]
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance	At least 75% of stdents Achieved High Competence level (>7 Grade Pt in 10 Pt scale) in Final Umiversity examination	At leasr 60% of stdents Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale) in Final Umiversity examination	At least 50% of stdents Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale) in Final Umiversity examination
		Performance in Practical Lab, Project work	At least 75% of stdents Achieved High Competence level (>7 Grade Pt in 10 Pt scale) in Practical Lab, Project work	At leasr 60% of stdents Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale) in Practical Lab, Project work	At least 50% of stdents Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale) in Practical Lab, Project work
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	At least 80% of the graduates are working in technical or professional carrers or got enrolled for higher studies	At least 70% of the graduates are working in technical or professional carrers or got enrolled for higher studies	At least 60% of the graduates are working in technical or professional carrers or got enrolled for higher studies
	(5% WEIGHTAGE)	Higher Studies record	At least 30% of the students go for higher studies	At least 20% of the students go for higher studies	less than 10% of the students go for higher studies
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	More than 20% of the students succeed in GPAT / Other competetive exams	At least 10% to 20% of the students succeed in GPAT / Other competetive exams	less than 10% of the students succeed in GPAT / Other competetive exams
	(10% WEIGHTAGE)	Exit survey feedback	Average assessment score of survey report is > 4.0	Average assessment score of survey report is between 3.01 to 3.99	Average assessment score of survey report is < 3.0
	(10% WEIGHTAGE)	Alumni Feedback	Average assessment score of survey report is > 4.0	Average assessment score of survey report is between 3.01 to 3.99	Average assessment score of survey report is < 3.0

2.3.2 Indicate results of assessment of each PO (100) Institute Marks 80.00

c) The expected level of attainment for each of the program outcomes;
d) Summaries of the results of the evaluation processes and an analysis illustrating the extent to which each of the programme outcomes are attained; and
e) How the results are documented and maintained.

File Name
BENCHMARKING- PO ATTAINMENT
PO ATTAINMENT- DIRECT
PO ATTAINMENT- INDIRECT
COMPARATIVE PLACEMENT DATA vs PO
PO vs ALUMNI MATRIX

a. A listing and description of the assessment processes used to gather the data upon which the evaluation of each the programme educational objective is based. Examples of data collection processes may include, but are not limited to, specific exam questions, student portfolios, internally developed assessment, senior project presentations, oral exams, focus groups – alumni, exit survey data;
b. The frequency with which these assessment processes are carried out.
c. Summaries of the results of the evaluation processes and an analysis illustrating the extent to which each of the programme outcomes are attained; and it is expected that the extent to which each of the program outcomes are attained are given in the attached files. The average score is considered to be the level of attainment of the Pos.

ASSESSMENT OF THE ATTAINMENT OF POs					
		Atainment level	3 : Completely attained	2 : Attained	1 : Partially attained
Performance indicators	% Weightage	Assement tool	AVG. ATAINMENT (2012-2013)	AVG. ATAINMENT (2013-2014)	AVG. ATAINMENT (2014-2015)
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance (70%)	2.5	2.6	2.5
		Performance in Practical Lab, Project work (30%)	3	3	3
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	3	3	3
	(5% WEIGHTAGE)	Higher Studies record	2	3	3
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	2	3	3
	(10% WEIGHTAGE)	Exit survey feedback	2	2	2
	(10% WEIGHTAGE)	Alumni Feedback	3	3	3
WEIGHTED AVERAGE METHOD :					
Performance indicators	% Weightage	Assement tool	2012-2013	2013-2014	2014-2015
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance	1.59	1.632	1.59
		Performance in Practical Lab, Project work			
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	0.3	0.3	0.3
	(5% WEIGHTAGE)	Higher Studies record	0.1	0.15	0.15
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	0.1	0.15	0.15

	(10% WEIGHTAGE)	Exit survey feedback	0.2	0.2	0.2
	(10% WEIGHTAGE)	Alumni Feedback	0.3	0.3	0.3
		TOTAL ATTAINMENT	3	3	3

2.4 Indicate how results of the assessment of achievement of the POs have been used for redefining the POs (10) **Total Marks 10.00**

Institute Marks 10.00

(Articulate, with rationale, how the results of the evaluation of the POs have been used to review/redefine the POs.)

This is the first ever systemic attempt to articulate the POs, mostly with participation of stake holders on board (faculty and selected Alumni from reputed organizations). However, based on the evaluation and review of the attainment of POs and based on the feedback from the exiting graduates, modification will be attempted in the programme curriculum aspects such as increase or decrease in the components of theory, practical, project work, communication skills courses and elective courses. In addition, attempt will be made to introduce new beyond syllabi courses, laboratory experiments, exercises for live project work, etc on the basis of external interaction with the industry and academia at seminar or conference. The assessment methods will also be reviewed such as increase or decrease in the assignments, talks, presentations, quizzes, etc. Novel assessment methods may be evolved once the results of evaluation after few years/batches are available.

However at the end of each semester the attainment of Pos have been assessed and feedback is collected from the stake holders like graduating students, alumni, industrial experts, employers and faculty members for redefining POs and PEOs keeping in view with current market trends possible revision in the program curriculum.

3 Programme Curriculum (100) **Total Marks 93.00**

3.1 Curriculum (20) **Total Marks 19.00**

3.1.1 Describe the structure of the curriculum (5) Institute Marks 5.00

#Seminars, project works may be considered as practical

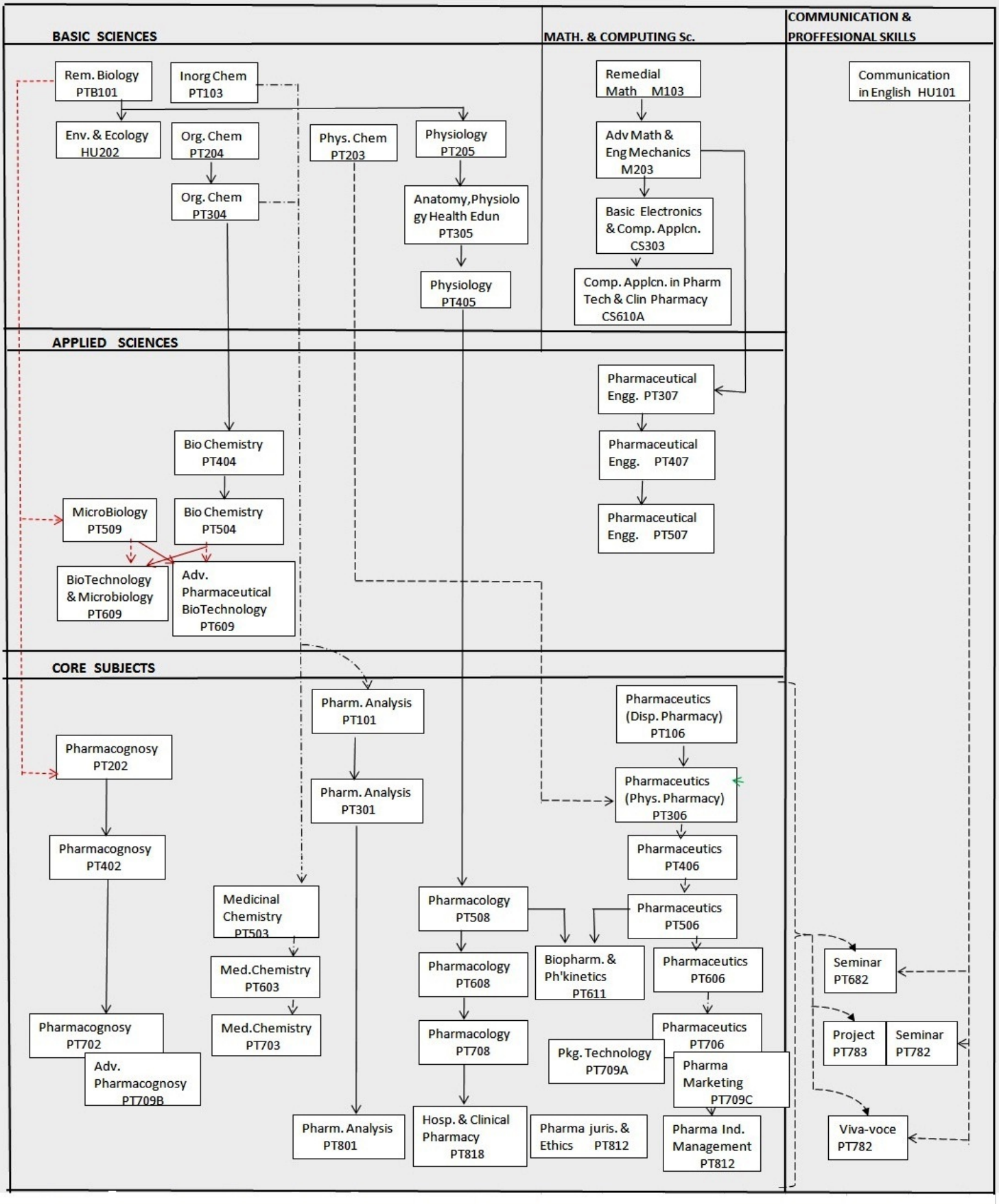
Course Code	Course Title	Total Number of contact hours				Credits
		Lecture (L)	Tutorial (T)	Practical (P)	Total Hours	
HU 101	Humanities	2.00	1.00	0.00	3.00	3.00
PT 101	Pharmaceutical Analysis	3.00	0.00	0.00	3.00	3.00
PTB 101 / M 103	Remedial Biology / Remedial Mathematics	3.00	0.00	0.00	3.00	3.00
PT 103	Pharmaceutical Chemistry (Inorganic)	3.00	1.00	0.00	4.00	4.00
PT 106	Pharmaceutics (Dispensing Pharmacy)	3.00	0.00	0.00	3.00	3.00
PT 191	Pharmaceutical Analysis Lab	0.00	0.00	3.00	3.00	2.00
PT 196	Pharmaceutics (Dispensing Pharmacy) Lab	0.00	0.00	3.00	3.00	2.00
PT 193	Pharmaceutical Chemistry Lab	0.00	0.00	3.00	3.00	2.00
PTB 191	Remedial Biology Lab	0.00	0.00	3.00	3.00	2.00
PT 203	Pharmaceutical Chemistry (Physical Chemistry)	3.00	1.00	0.00	4.00	4.00
M 203	Advanced Mathematics & Engineering Mechanics	3.00	1.00	0.00	4.00	4.00
PT 204	Pharmaceutical Chemistry (Organic Chemistry)	3.00	1.00	0.00	4.00	4.00
HU 202	Enviornment & Ecology	3.00	0.00	0.00	3.00	3.00
PT 202	Pharmacognosy	2.00	1.00	0.00	3.00	3.00
PT 205	Physiology	2.00	1.00	0.00	3.00	3.00
PT 293	Pharmaceutical Chemistry(Physical Chemistry) Lab	0.00	0.00	3.00	3.00	2.00
PT 294	Pharmaceutical Chemistry (Organic Chemistry) Lab	0.00	0.00	3.00	3.00	2.00
PT 292	Pharmacognosy Lab	0.00	0.00	3.00	3.00	2.00
PT 295	Physiology Lab	0.00	0.00	3.00	3.00	2.00
PT 304	Pharmaceutical Chemistry (Organic Chemistry)	3.00	1.00	0.00	4.00	4.00
PT 301	Pharmaceutical Analysis	3.00	1.00	0.00	4.00	4.00
PT 306	Pharmaceutics (Physical Pharmacy)	3.00	1.00	0.00	4.00	4.00
PT 307	Pharmaceutical Engineering	3.00	1.00	0.00	4.00	4.00
CS 303	Basic Electronics & Computer Application	3.00	1.00	0.00	4.00	4.00
PT-305	Anatomy, Physiology & Health Education (APHE)	3.00	0.00	0.00	3.00	3.00
PT 394	Pharmaceutical Chemistry(Organic Chemistry) Lab	0.00	0.00	3.00	3.00	2.00
PT 391	Pharmaceutical Analysis	0.00	0.00	3.00	3.00	2.00
PT 396	Pharmaceutics(Physical Pharmacy) Lab	0.00	0.00	3.00	3.00	2.00

PT 397	Engineering Drawing Lab	0.00	0.00	3.00	3.00	2.00
CS 393	Basic Electronics & Computer Application Lab	0.00	0.00	3.00	3.00	2.00
PT 406	Pharmaceutics (Pharmaceutical Technology -I)	3.00	1.00	0.00	4.00	4.00
PT 402	Pharmacognosy	3.00	1.00	0.00	4.00	4.00
PT 404	Pharmaceutical Chemistry(Bio-Chemistry)	3.00	1.00	0.00	4.00	4.00
PT 405	Physiology	3.00	1.00	0.00	4.00	4.00
PT 407	Phamaceutical Engineering	3.00	1.00	0.00	4.00	4.00
PT 496	Phamaceutics (Pharmaceutical Technology-I) Lab	0.00	0.00	3.00	3.00	2.00
PT 492	Pharmacognosy Lab	0.00	0.00	3.00	3.00	2.00
PT 497	Pharmaceutical Engineering Lab	0.00	0.00	3.00	3.00	2.00
PT 494	Pharmaceutical Chemistry (Bio-Chemistry) Lab	0.00	0.00	3.00	3.00	2.00
PT 506	Pharmaceutics (Pharmaceutical Technology - II)	3.00	1.00	0.00	4.00	4.00
PT 508	Pharmacology	3.00	0.00	0.00	3.00	3.00
PT 509	Pharmaceutical Microbiology	3.00	0.00	0.00	3.00	3.00
PT 503	Pharmaceutical Chemistry(Medicinal Chemistry)	3.00	1.00	0.00	4.00	4.00
PT 507	Pharmaceutical Enginering	3.00	0.00	0.00	3.00	3.00
PT 504	Pharmaceutical Chemistry(Bio Chemistry)	3.00	0.00	0.00	3.00	3.00
PT 596	Pharmaceutics (Pharmaceutical Technology-II) Lab	0.00	0.00	3.00	3.00	2.00
PT 597	Pharmaceutical Engineering Lab	0.00	0.00	3.00	3.00	2.00
PT 599	Pharmaceutical Microbiology Lab	0.00	0.00	3.00	3.00	2.00
PT 593	Pharmaceutical Chemistry (Medicinal Chemistry) Lab	0.00	0.00	3.00	3.00	2.00
PT 603	Pharmaceutical Chemistry(Medicinal Chemistry)	3.00	1.00	0.00	4.00	4.00
PT 606	Pharmaceutics (Pharmaceutical Technology)	3.00	0.00	0.00	3.00	3.00
PT 611	Pharmaceutics (Bio-Pharmaceutics & Pharmacokinetics)	3.00	1.00	0.00	4.00	4.00
PT 608	Pharmacology	3.00	0.00	0.00	3.00	3.00
PT 609	Pharmaceutical Bio-Technology & Industrial Micro-Biology	3.00	0.00	0.00	3.00	3.00
PT 610A /610B	Comp App in Pharm Tech and in Clinical Pharmacy / Adv Pharm Biotechnology	0.00	0.00	3.00	3.00	3.00
PT 693	Pharmaceutical Chemistry (Medicinal Chemistry) Lab	0.00	0.00	3.00	3.00	2.00
PT 696	Pharmaceutics (Pharmaceutical Technology) Lab	0.00	0.00	3.00	3.00	2.00
PT 697	Pharmaceutics (Bio-Pharmaceutics & Pharmacokinetics) Lab	0.00	0.00	3.00	3.00	2.00
PT 698	Pharmacology Lab	0.00	0.00	3.00	3.00	2.00
PT 691A / 691B	Comp App in Pharm Tech and in Clinical Pharmacy / Adv Pharm Biotechnology	0.00	0.00	0.00	0.00	0.00
PT 682	Seminar	0.00	0.00	3.00	3.00	2.00
PT 706	Pharmaceutics (Pharmaceutical Technology)	3.00	0.00	0.00	3.00	3.00
PT 703	Pharmaceutical Chemistry (Medicinal Chemistry)	3.00	0.00	0.00	3.00	3.00
PT 702	Pharmacognosy	3.00	0.00	0.00	3.00	3.00
PT 708	Pharmacology	3.00	0.00	0.00	3.00	3.00
PT 709A / 709B / 709C	Packaging Technology / Adv Pharmacognosy / Pharm Mkt Management	3.00	0.00	0.00	3.00	3.00
PT 796	Pharmaceutics (Pharmaceutical Technology) Lab	0.00	0.00	3.00	3.00	2.00
PT 793	Pharmaceutical Chemistry (Medicinal Chemistry) Lab	0.00	0.00	3.00	3.00	2.00
PT 783	Project	0.00	0.00	8.00	8.00	6.00
PT 782	Seminar on assigned topic	0.00	0.00	3.00	3.00	2.00
PT 812	Pharmaceutical Industrial Management	3.00	0.00	0.00	3.00	3.00
PT 813	Pharmaceutical Jurisprudence & Ethics	3.00	0.00	0.00	3.00	3.00
PT 818	Hospital Pharmacy & Clinical Pharmacy	3.00	0.00	0.00	3.00	3.00
PT 801	Pharmaceutical Analysis	3.00	0.00	0.00	3.00	3.00
PT 891	Pharmaceutical Analysis	0.00	0.00	3.00	3.00	2.00
PT 884	Viva- Voce	0.00	0.00	6.00	6.00	6.00
Total		123.00	21.00	107.00	251.00	219.00

3.1.2 Give the prerequisite flow chart of courses (5) Institute Marks 5.00

(Give the schematic representation of the prerequisites of the courses in the curriculum)

Schematics of the prerequisites of the courses in the curriculum



3.1.3 Justify how the programme curriculum satisfies the program specific criteria (10) Institute Marks 9.00

(Justify how the programme curriculum satisfies the programme specific criteria specified by the American professional societies relevant to the programme under accreditation)

- The Institute imparts education in the field of pharmaceuticals. The students learn the lessons in a disciplined, scientific atmosphere at the hands of highly qualified teachers. The students grow up to become competent leaders, who are democratic as well as humble in nature.
- It will be possible through continuous counseling of student. The vision and mission of the institute strongly emphasizes on the aspects of promoting and implementing pharmaceutical research programme through installation of state-of-art scientific, computing facilities and research facilities at this institute. Thus the Institute's mission and vision addresses the needs of the society and the professional development of the students.

- Institute follows the well-structured and systematic process in design, development and revision of curricula. The institute is under West Bengal University of Technology where semester and credit based system is followed which is globally accepted.
- The Institute assesses the need for the revision, to update the subjects and topics which meet the demands of latest development and recent advances happening in the field of pharmacy, the extent and depth of the change, the actual matter which needs to be incorporated and the one which has become redundant which needs to be scrapped out.
- The institute is approved by All India Council of Technical Education (AICTE) and Pharmacy Council of India (PCI), however, the institute follows the curricula as designed by West Bengal University of Technology (WBUT).
- So the institute does not have any right to restructure the curricula. However when there is a need arising to redesign the curriculum, the institute has always taken initiative for the same, and the institute has the system of obtaining feedback forms on curriculum from students, alumni, parents and academic peers, industry persons.
- The feedback forms are collected by Departmental Academic Committee, then forwarded to the Academic Council and finally analyzed by the members of the Institutional Board of Studies.
- Based on the feedback collected from the student and academic peers, the proposed curriculum is charted out by the institutional Board of Studies. The proposed syllabus is then forwarded to the University for its Approval.
- On feedback and suggestion, academic council of WBUT initiate restructuring of the curricula.Until the curriculum is revised, the proposed revision is included in the beyond-syllabus teaching methodology like teacher seminar, student seminar, remedial classes, industrial visits, seminar by distinguished guests.
- To carry out roles of pharmacist effectively, pharmacists need to be well prepared on how to deal with patients behavior and psychology. The understanding of patient socio-behavioral aspects in the medication use process is paramount to achieving optimal clinical and humanistic outcomes from therapy.
- For this purpose the curriculum has included subjects like Hospital and clinical Pharmacy, Dispensing and community pharmacy and Pharmacology. These subjects provide knowledge about the rationale behind selection of drug, how to do patient counseling; pharmacology subjects provides information about therapeutic uses and side effects of drugs.
- Furthermore some topics in B. Pharm. syllabus are included like standardization of herbal drugs, neutraceuticals, BA/BE study, biotechnology, GMP, GLP, ISO, IPR, Preformulation study, recent trends in instrumentation etc. These all topics teach all aspects to the students that are related to global trends in health science.
- Pharmaceutical Jurisprudence and Ethics• is also included in the syllabus that gives idea about regulatory aspects in pharmacy especially laws related to drugs and cosmetics and other aspects of pharmacy.

3.2 State the components of the curriculum and their relevance to the POs and the PEOs (15) **Total Marks 15.00**

Institute Marks 15.00

Programme curriculum grouping based on different components

Course Component	Curriculum Content (% of total number of credits of the programme)	Total number of contact hours	Total Number of credits	POs	PEOs
Pharmacy	66.67	167.00	146.00	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO10	PEO1, PEO2, PEO3, PEO4
Science	19.41	48.50	42.50	PO1, PO2, PO3, PO4, PO6, PO7	PEO1, PEO2, PEO3, PEO4
Computing	5.25	12.50	11.50	PO1, PO2, PO10	PEO1, PEO2, PEO4
Humanities	8.68	23.00	19.00	PO3, PO4, PO9	PEO1, PEO2, PEO3, PEO4

3.3 State core pharmacy subjects and their relevance to Programme Outcomes (30) **Total Marks 30.00**

Institute Marks 30.00

(Describe how the core pharmacy subjects in the curriculum lend a learning experience of the complex problems.)

Core pharmacy subjects and their relevance to Programme Outcomes														
	COURSE NO.	COURSE CODE	COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Semester-I	Course-1	HU101	HUMANITIES (PROFESSIONAL COMMUNICATION IN ENGLISH)									X		
	Course-2	PT101	PHARMACEUTICAL ANALYSIS	X	X									
	Course-3	M103/PTB101	REMEDIAL MATHEMATICS / REMEDIAL BIOLOGY	X										
	Course-4	PT103	PHARMACEUTICAL CHEMISTRY (INORGANIC PHARMACEUTICAL CHEMISTRY)	X	X									
	Course-5	PT106	PHARMACEUTICS (DISPENSING PHARMACY)	X				X	X		X			
	Course-6	PT191	PHARMACEUTICAL ANALYSIS Lab		X		X							
	Course-7	PT196	PHARMACEUTICS (DISPENSING PHARMACY) Lab		X		X				X			
	Course-8	PT193	PHARMACEUTICAL CHEMISTRY Lab		X		X							
	Course-9	PTB191	REMEDIAL BIOLOGY Lab		X		X							
	Course-10	PT202	PHARMACOGNOSY	X				X						
			PHARMACEUTICAL CHEMISTRY											

	Course-11	PT203	(PHYSICAL CHEMISTRY)	X										
	Course-12	PT204	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY)	X	X									
	Course-13	PT205	PHYSIOLOGY	X										
Semester-II	Course-14	M203	ADVANCED MATEHMATICS & ENGINEERING MECHANICS	X										
	Course-15	HU202	ENVIRONMENT & ECOLOGY							X				
	Course-16	PT292	PHARMACOGNOSY Lab		X		X							
	Course-17	PT293	PHARMACEUTICAL CHEMISTRY (PHYSICAL CHEMISTRY) Lab		X		X							
	Course-18	PT294	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY) Lab		X		X							
	Course-19	PT295	PHYSIOLOGY Lab		X		X							
	Course-20	PT304	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY)	X										
	Course-21	PT301	PHARMACEUTICAL ANALYSIS	X	X								X	
	Course-22	PT306	PHARMACEUTICS (PHYSICAL PHARMACY)	X									X	
	Course-23	PT307	PHARMACEUTICAL ENGINEERING	X									X	
	Course-24	CS303	BASIC ELECTRONICS & COMPUTER APPLICATION	X									X	X
Semester-III	Course-25	PT305	ANATOMY, PHYSIOLOGY & HEALTH EDUCATION (APHE)	X					X					
	Course-26	PT394	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY) Lab		X		X							
	Course-27	PT391	PHARMACEUTICAL ANALYSIS Lab		X		X						X	
	Course-28	PT396	PHAMACEUTICS (PHYSICAL PHARMACY) Lab		X		X							
	Course-29	PT397	ENGINEERING DRAWING Lab		X									
	Course-30	CS393	BASIC ELECTRONICS & COMPUTER APPLICATION Lab		X		X						X	
	Course-31	PT402	PHARMACOGNOSY	X				X						
	Course-32	PT404	PHARMACEUTICAL CHEMISTRY (BIO-CHEMISTRY)	X										
	Course-33	PT405	PHYSIOLOGY	X										
	Course-34	PT406	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-I)	X				X	X				X	
Semester-IV	Course-35	PT407	PHARMACEUTICAL ENGINEERING	X									X	
	Course-36	PT492	PHARMACOGNOSY Lab		X		X							
	Course-37	PT494	PHARMACEUTICAL CHEMISTRY (BIO-CHEMISTRY) Lab		X		X							
	Course-38	PT496	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-I) Lab		X		X						X	
	Course-39	PT497	PHARMACEUTICAL ENGINEERING Lab		X		X						X	
	Course-40	PT506	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-II)	X				X	X				X	
	Course-41	PT508	PHARMACOLOGY	X				X						
	Course-42	PT509	PHARMACEUTICAL MICRO-BIOLOGY	X					X	X	X			
	Course-43	PT503	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY)	X									X	

Semester-V	Course-44	PT507	PHARMACEUTICAL ENGINEERING	X									X	
	Course-45	PT504	PHARMACEUTICAL CHEMISTRY (BIO-CHEMISTRY)	X										
	Course-46	PT596	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-II) Lab		X		X						X	
	Course-47	PT597	PHARMACEUTICAL ENGINEERING Lab		X		X						X	
	Course-48	PT599	PHARMACEUTICAL MICRO-BIOLOGY Lab		X		X		X		X			
	Course-49	PT593	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY) Lab		X		X						X	
Semester-VI	Course-50	PT603	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY)	X									X	
	Course-51	PT606	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY)	X				X	X				X	
	Course-52	PT608	PHARMACOLOGY	X				X						
	Course-53	PT609	PHARMACEUTICAL BIO-TECHNOLOGY & INDUSTRIAL MICRO-BIOLOGY	X					X		X			
	Course-54	PT611	PHARMACEUTICS (BIO-PHARMACEUTICS & PHARMACOKINETICS)	X				X	X				X	X
	Course-55	PT610A/B	ELECTIVE-I (COMPUTER APPLICATION IN PHARMACEUTICAL TECHNOLOGY/ADVANCED BIO-TECHNOLOGY)	X					X				X	X
	Course-56	PT691A/B	ELECTIVE-I Lab (COMPUTER APPLICATION IN PHARMACEUTICAL TECHNOLOGY/ADVANCED BIO-TECHNOLOGY)		X				X				X	X
	Course-57	PT693	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY) Lab		X		X						X	
	Course-58	PT696	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY) Lab		X		X						X	X
	Course-59	PT697	PHARMACUTICS (BIO-PHARMACEUTICS & PHARMACOKINETICS) Lab		X		X						X	X
	Course-60	PT698	PHARMACOLOGY Lab		X		X	X			X			
	Course-61	PT682	SEMINAR			X						X		
Semester-VII	Course-62	PT706	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY)	X				X	X				X	X
	Course-63	PT703	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY)	X									X	X
	Course-64	PT702	PHARMACOGNOSY	X				X						X
	Course-65	PT708	PHARMACOLOGY	X				X						X
	Course-66	PT709A/B/C	PACKAGING TECHNOLOGY / ADVANCED PHARMACOGNOSY / PHARMACEUTICAL MARKETING MANAGEMENT	X			X	X				X		X
	Course-67	PT796	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY) LAB		X		X						X	X
	Course-68	PT793	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY) LAB		X		X						X	X
	Course-69	PT783	PROJECT		X	X	X					X		
	Course-70	PT782	SEMINAR ON ASSIGNED TOPIC			X						X		
	Course-71	PT801	PHARMACEUTICAL ANALYSIS	X									X	X
			PHARMACEUTICAL INDUSTRIAL											

Semester-VIII	Course-72	PT812	MANAGEMENT	X			X		X			X		X
	Course-73	PT813	PHARMACEUTICAL JURISPRUDENCE & ETHICS	X					X		X			
	Course-74	PT818	HOSPITAL PHARMACY & CLINICAL PHARMACY	X				X	X		X	X		
	Course-75	PT891	PHARMACEUTICAL ANALYSIS lab		X		X						X	X
	Course-76	PT884	VIVA-VOCE	X								X		
TOTAL				**42**	**34**	**3**	**30**	**15**	**15**	**2**	**8**	**8**	**30**	**16**

3.4 Industry interaction/internship (15) **Total Marks 10.00**

Institute Marks 10.00

(Give the details of industry involvement in the programme such as industry-attached laboratories and partial delivery of courses and internship opportunities for students.)

LIST OF STUDENTS FOR UNDERGOING VOCATIONAL TRAINING

B. Pharm (year)	Year & Sem	No. of Weeks / days	No. of students
2012-2013	3rd Yr. , 5th Sem	15 days	56
2012-2013	3rd Yr. , 6th Sem	15 days	24
2013-2014	3rd Yr. , 5th Sem	15 days	36
2013-2014	3rd Yr. , 6th Sem	15 days	13
2014-2015	3rd Yr. , 5th Sem	15 days	28
2014-2015	3rd Yr. , 6th Sem	15 days	42

LIST OF INDUSTRIES WHERE VOCATIONAL TRAINING WAS CONDUCTED		
S. NO.	NAME OF THE INDUSTRIES	ADDRESS
1	Deys Medical Manufacturing Stores (Manufacturing) Ltd.	62, Bondel Road, Kolkata - 700 019
2	East India Pharmaceutical works Ltd.	119, Biren Roy Road West, Sarsuna , Kolkata - 700 061
3	Emami Limited	13, B.T. Road, , Belgharia, Kolkata - 700 056
4	Stadmed Private Limited	15, Jawpore Road, Kolkata - 700 074
5	Palsons Derma Private Limited	E7-92/New, Biren Roy Road(West),P.O. Sarsuna, Behala, Kolkata - 700 061
6	Albert David Limited	5/11, D. Gupta Lane, Kolkata - 700 050
7	Caplet India Private Limited	Rekjuani Rajarhat , 24 Parganas (N), Pin 700 135
8	Union Drug Company Limited	182, Rai Bahadur Road, Kolkata - 700 034
9	Gluconatre Health Ltd.	1, Health Institute Road, Dum Dum Cant. Kolkata - 700065
10	Parker Robinson Pvt. Ltd.	H.O. 1, Nimak Mahal Road, Kolkata - 700 043
11	Sun Pharmaceutical Industries Ltd.	SPARC, Tandalja, Vadodara - 390 020
12	Theism Medicare	Plot No. 69-A, G.I.D.C., Vapi-396195 Gujrat
13	Cadila Pharmaceuticals Ltd.	1389, Trasad Road, Dholka - 367 810, Dist. Ahemedabad, Gujarat
14	Martina Bio Genics Pvt. Ltd.	Dareer Road, Chowhati, Rajpur, Kolkata - 700 151
15	Klar Sehen Private Limited	60A, Ashok Avenue, Kolkata - 700 040
16	Drakt International	Diamond Harbour Road, Joka, Kolkata - 700 104
17	Herbs Era Pharmaceuticals (P) Ltd.	P.O. Udayrajpur, Kolkata- 700 129

3.5 Illustrate the measures and processes used to identify the curricular gaps to the attainment of the COs/POs (5) **Total Marks 5.00**

Institute Marks 5.00

(Details of the processes used to curricular gaps to the attainment of defined course outcomes and programme outcomes.)

1. The institute is approved by All India Council of Technical Education (AICTE) and Pharmacy Council of India (PCI), however, the institute follows the curriculam as designed by Maulana Abul Kalam Azad University of Technology (MAKAUT). The Institute imparts education in the field of Drugs & Pharmaceuticals. The students learn the lessons in a disciplined, scientific atmosphere at the hands of highly qualified teachers.
2. The Institutes mission and vision addresses the needs of the society and the professional development of the students.

3. The institute does not have any right to restructure the curriculam. However when there is a need arising to redesign the curriculum, the institute has always taken initiative for the same, and the institute has the system of obtaining feedback on curriculum from students, alumni, parents and academic peers, industry persons.
4. The feedback are then analyzed by the members of the institutional Board of Studies for the institute.
5. Based on the feedback collected from the student and academic peers, the proposed curriculum is charted out by the institutional Board of Studies. The proposed syllabus is then forwarded to the University for its Approval.
6. On feedback and suggestion from the faculty members, the academic council of MAKAUT may initiate restructuring of the curricula. Time to time views of faculty members from different colleges are compiled by the academic council of the University for Revision of the syllabus. (The last revision of B.Pharm syllabus done in 2008)
7. The suggested advancements are covered in beyond syllabus teaching methodology like teacher seminar, student seminar, industrial visits, seminar by distinguished researchers to introduce students to advanced and interdisciplinary courses on the basis of local, regional, national and global perspective.

3.6 Indicate the content beyond syllabus imparted for the attainment of the COs/POs (10) **Total Marks 9.00**

Institute Marks 9.00

(Details of the content beyond syllabus imparted for the attainment of the COs/POs. This information may be provided course wise or module wise.)

Professional society activities, events, conferences organized etc. for the year 2012-2013		
Date	**Speaker**	**Topic**
07.11.2012	Dr. M.K. Chattopadhyay, Scientist, Centre for Cellular & Molecular Biology, Hyderabad.	Two memorable chapters in cholera Research.
24.11.2012	Dr. Chintamoni Ghosh, Director, Directorate of Drug Control, West Bengal.	51th National Pharmacy Week Theme: Phrmacists in Public Health.
	Dr. Amalendu Basu, Director, Directorate of Drug Control, West Bengal.	
	Mr. Sovan Bagchi, Registrar, West Bengal Pharmacy Council.	
	Mr. Sambhu Nath Dey, Asst. Director,Drug Control.	
	Mr. Ujjal Mondal, Manager, Product Development, Deys Medical.	
01.03.2013	Dr. Nirmal Maji, President, IMA Bengal Branch.	NATCONPH 2013: Theme of Conference: Changing scenario of Phramaceutical Technology & Research in the era of Globalization: an Indian perspective.
	Dr. Chitamoni Ghosh, Director, Directorate of Drugs Control,Govt. of West Bengal.	
	Dr. Samir Kr. Bandyopadhyay, Vice Chancellor, West Bengal University of Technology.	
	Dr. Siddhartha Majumdar, Chairman, College Service commission.	
	Dr. Subhasis Maity, Director, NSHM Knowledge Campus, Kolkata-Group of institutions.	
Professional society activities, events, conferences organized etc. for the year 2013-2014		
Date	**Speaker**	**Topic**
31.07.2013	Prof. M. Elaichauri, Professor, 1st University, Morocco.	Phytochemistry Research
20.11.2013	Pradip Bhowmik, M.D., Burnett Pharmaceuticals.	52nd National Pharmacy Week Theme: A Healthcare profesional.
19.01.2014	Prof. H.J. Hacker, Sr. Scientist, German Cancer Research Centre.	New insights into diseases and recent therapeutic approaches
20.01.2014	Lisa Kathleen Ryan, Sr. Scientist, Medical School, University of Medicine and Dentistry, New Jersey, USA.	Beta-Defensins: Antimicrobial Peptides and Immunomodulatory Agents.
17.01.2014	Prof. Ambika C Banerjee, President IAPST, Kolkata.	NATCONPH 2014: Theme of Conference: New insight into disease and recent therapeutic approaches.
	Prof. Malay Chatterjee, Emeritus Professor Dept. of Pharm. Tech, Jadavpur University.	
19.02.2014	Prof. Biswajit Mukherjee, Professor, Dept. of Pharm. Tech, Jadavpur University.	
	Dr. Subhasis Maity, Director, NSHM Knowledge Campus, Kolkata-Group of institutions.	
Professional society activities, events, conferences organized etc. for the year 2014-2015		
Date	**Speaker**	**Topic**
21.02.2015	Dr. Jui Chakraborty, Scientist, CGCRI,	Glass and ceramics in health

	Kolkata.	care: New promises and hopes.
20.02.2015	Dr. Amalendu Basu, Addl. Director, Directorate of Technical Education, Govt. of West Bengal.	NATCONPH 2015: Theme of Conference : Empowering Pharmaceutical and Healthcare professionals - Vision 2020.
	Prof. Tapan Kr. Maity, HOD, Dept. of Pharmaceutical Technology, Jadavpur University.	
21.02.2015	Prof. Madhusudhan Chaudhury, Principal, IQ City Medical College,Durgapur.	
	Dr. Subhasis Maity, Director, NSHM Knowledge Campus, Kolkata-Group of institutions.	
20.03.2015	Prof. Tetsuya Konishi, Scientist Professor, Department of Functional and Analytical Food Sciences, Niigata University of Pharmacy & Applied Life Sciences, Japan.	Is there any diference in the mode of action between drug and food factors?
21.03.2015	Dr. Debasish Pahari, R&D Officer, Shree Baidya Nath Ayurved Bhawan Pvt. Ltd.	Applications of alternative medicine in modern healthcare system.
21.03.2015	Mr. Manoj Saha, Product Manager, Stadmed Pvt. Ltd.	The Challenge of Pharmaceutical marketing in digital world.

3.7 Course Syllabi (5) **Total Marks 5.00**

Institute Marks 5.00

(Include, in appendix, a syllabus for each course used. Syllabi format should be consistent and shouldn't exceed two pages.)
The syllabi format may include:
- Department, course number, and title of course
- Designation as a required or elective course
- Pre-requisites
- Contact hours and type of course (lecture, tutorial, seminar, project etc.,)
- Course Assessment methods (both continuous and semester-end assessment)
- Course outcomes
- Topics covered
- Text books, and/or reference material

File Name
Course Syllabi

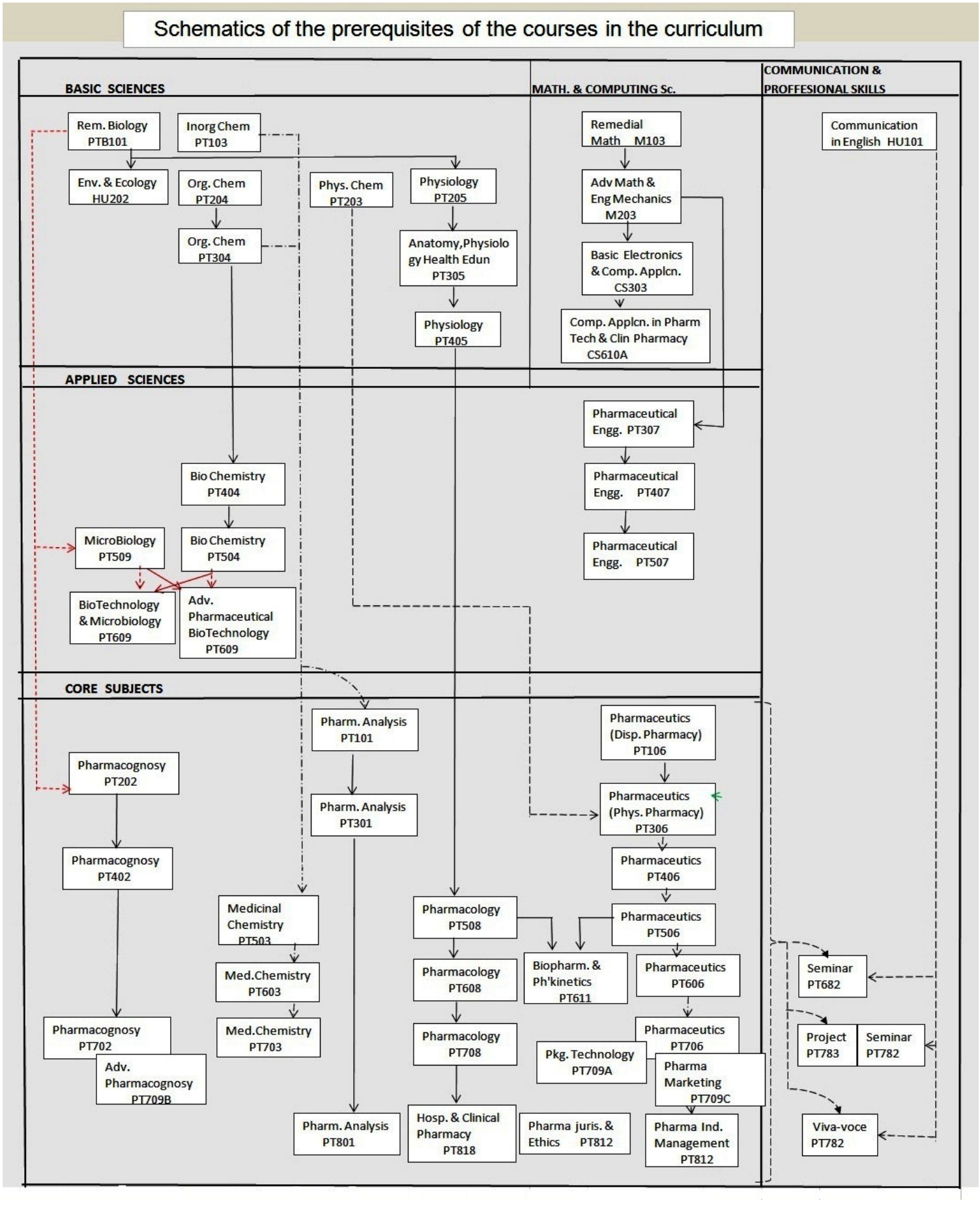
The UG program in Pharmacy is spread over 8 semesters and designed to have a total of 219 credits. The course credits are broadly fixed based on the following norms.

- Lectures-One Lecture period per week is assigned one credit.
- Tutorials-One tutorial periods per week are assigned one credit.
- Practical-Three practical periods per week are assigned two credits.
- Seminar/Industrial Training/project/ shall have two credits each.
- Major project shall have 6 credits.

However, some courses are prescribed with fixed number of credits and some with variable credits depending on the complexity of the subject and relative importance.

The structure of the curriculum is described along with the distribution of contact hours in the **Annexed file** mentioning the following details:

- Department, course number, and title of course
- Designation as a required or elective course
- Pre-requisites
- Contact hours and type of course (lecture, tutorial, seminar, project etc.)
- Course Assessment methods (both continuous and semester-end assessment)
- Course outcomes
- Topics covered
- Text books, and/or reference material



4 Students' Performance (75) **Total Marks 65.13**

Admission intake in the programme

Item	2014-2015	2013-2014	2012-2013	2011-2012	2010-2011	2009-2010	2008-2009
Sanctioned intake strength in the programme (N)	120	120	60	60	60	60	60
Total number of admitted students in first year minus number of students migrated to other programmes at							

the end of 1st year (N1)	119	118	58	58	59	39	40

4.1 Success Rate (20)

Total Marks 19.20

Institute Marks 19.20

Provide data for the past seven batches of students

*successfully completed implies zero backlogs

Year of entry (in reverse chronological order	Number of students admitted in 1st year (N1)	Number of students who have successfully completed*			
		1st year	2nd year	3rd year	4th year
2014-2015	119	0	0	0	0
2013-2014	118	65	0	0	0
2012-2013	58	62	46	0	0
2011-2012	58	61	67	60	0
2010-2011 (LYG)	59	34	43	48	53
2009-2010 (LYGm1)	39	21	39	34	38
2008-2009 (LYGm2)	40	33	50	47	48

Success rate = 20 × mean of success index (SI) for past three batches
SI = (Number of students who graduated from the programme in the stipulated period of course duration)/(Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry)

Item	LYG 2010-2011	LYGm1 2009-2010	LYGm2 2008-2009
Number of students admitted in the corresponding First Year	59.00	39.00	40.00
Number of students who have graduated in the stipulated period	53.00	38.00	48.00
Success index (SI)	0.90	0.97	1.00

Average SI 0.96

Success rate 19.20

4.2 Academic Performance (40)

Total Marks 34.93

Institute Marks 15.35

Assessment = 2 × API
Average Assessment for three Years

Item Approximating the API by the following mid-point analysis	LYG 2010-2011	LYGm1 2009-2010	LYGm2 2008-2009
9 < Number of students with CGPA < 10	3.00	2.00	0.00
8 < Number of students with CGPA < 9	15.00	9.00	15.00
7 <= 8	22.00	20.00	28.00
6 <= 7	13.00	7.00	5.00
5 <= 6	0.00	0.00	0.00
Total	53.00	38.00	48.00
Approximating API By Mid-CGPA	0.00	0.00	0.00
Mean of CGPA/Percentage of all the students API	7.65	7.66	7.71
Assessment	15.30	15.32	15.42

Average assessment points

Institute Marks 19.58

Assessment Points = 20 × (x + 1.25y)/N

where, x = Number of students placed
y = Number of students admitted for higher studies with valid qualifying scores/ranks, and
N = Total number of students who were admitted in the batch subject to maximum assessment points = 20.

Item	LYG 2010-2011	LYGm1 2009-2010	LYGm2 2008-2009
Number of admitted students corresponding to LYG including lateral entry (N)	59.00	39.00	40.00
Number of students who obtained jobs as per the record of placement office (x1)	24.00	4.00	10.00
Number of students who found employment otherwise at the end of the final year (x2)	11.00	7.00	15.00
Number of students who opted for higher studies with valid qualifying scores/ranks (y)	24.00	28.00	10.00

x=x1+x2	35.00	11.00	25.00
Assessment points	20.00	20.00	18.75

Average assessment points 19.58

4.3 Professional Activities (15) — Total Marks 11.00

4.3.1 Professional societies / chapters and organising events (3) — Institute Marks 3.00

(Instruction: The institution may provide data for past three years)

MEMBERSHIP OF PROFESSIONAL ORGANIZATIONS:

Various students of NCPT have shown their interest to get attached with professional organizations like Indian Pharmaceutical Association, Indian Pharmacy Graduates Association etc., and they attend various programmes organized by such organizations throughout the year.

NATIONAL PHARMACY WEEK:

National Pharmacy Week (NPW) is organized by the portal every year. In 2012, the programme was chaired by Mr. Sovon Bagchi, Registrar, Pharmacy Council of India, West Bengal, Dr. Sambhu Nath De, Inspector of Drugs, Dr. Chintamoni Ghosh, Director, Directorate of Drug Control and Dr. Amalendu Basu, Additional Director, Directorate of Technical Education, West Bengal.

In 2013, NPW celebration was a bit different as the institute hosted the STUDENTS' DAY CELEBRATIONS, which is a part of the NPW Celebration of IPA, Bengal Branch, and the occasion was marked with prominent IPA members like Mr. P.K. Mallick of Burnette Pharmaceuticals Ltd. Students from various colleges also were present on the same occasion including BCDA College of Pharmacy & Technology, Jnan Chandra Ghosh Polytechnic College and many more. The Controller of Examinations, West Bengal University of Technology also graced the occasion with his presence as the Chief Guest of the occasion.

In 2014, NPW Celebrations was marked with the presence of Prof. Amal Kumar Bandyopadhyay, Jadavpur University, Dr. Nina Das, HOD, Department of Pharmacology, Nil Ratan Sarkar Medical College and Hospital, Dr. Tulsi Chakraborty, Director, SIGCAP Pharmaceuticals Ltd. This there was an attempt to correlate pharmacists' role in education, industry as well as hospital and healthcare system.

NATCONPH:

NATCONPH is the brand name of National Conference, organized by NSHM College of Pharmaceutical Technology, NATCONPH started in 2010 and then onwards it is organized every year. NATCONPH 2013 was organized during the academic year 2012-13, and was chaired by Dr. Nirmal Majhi, Minister, Ministry of Health. It was a two day event. In 2014, it was an International Conference organized jointly with IAPST and Jadavpur University. Scientists thoroughout the world graced this occasion. Invitees included Prof. Peter Banansch, popularly known as "Father of Hepatocarcinogenesis", Prof. Hacker from German Cancer Research Center and Prof. Ulrike Holzgrabe, an important member of the European Pharmacipoeial Commission. In 2015, NATCONPH was organized in co-ordination with Hospital management Department. Speakers from both Pharmacy & Healthcare Profession graced the occasion.

BLOOD DONATION CAMP:

Blood Donation Camp is organized by NCPT students and faculty members every year.

Professional society activities, events, conferences organized etc. for the year 2012-2013		
Date	**Speaker**	**Topic**
07.11.2012	Dr. M.K. Chattopadhyay, Scientist, Centre for Cellular & Molecular Biology, Hyderabad.	Two memorable chapters in cholera Research.
24.11.2012	Dr. Chintamoni Ghosh, Director, Directorate of Drug Control, West Bengal.	51th National Pharmacy Week Theme: Phrmacists in Public Health.
	Dr. Amalendu Basu, Director, Directorate of Drug Control, West Bengal.	
	Mr. Sovan Bagchi, Registrar, West Bengal Pharmacy Council.	
	Mr. Sambhu Nath Dey, Asst. Director,Drug Control.	
	Mr. Ujjal Mondal, Manager, Product Development, Deys Medical.	
01.03.2013	Dr. Nirmal Maji, President, IMA Bengal Branch.	NATCONPH 2013: Theme of Conference: Changing scenario of Phramaceutical Technology & Research in the era of Globalization: an Indian perspective.

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	Prof. Malay Chatterjee, Emeritus Professor Dept. of Pharm. Tech, Jadavpur University.	
19.02.2014	Prof. Biswajit Mukherjee, Professor, Dept. of Pharm. Tech, Jadavpur University.	
	Dr. Subhasis Maity, Director, NSHM Knowledge Campus, Kolkata-Group of institutions.	

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	Prof. Tapan Kr. Maity, HOD, Dept. of Pharmaceutical Technology, Jadavpur University.	
21.02.2015	Prof. Madhusudhan Chaudhury, Principal, IQ City Medical College,Durgapur.	
	Dr. Subhasis Maity, Director, NSHM Knowledge Campus, Kolkata-Group of institutions.	
20.03.2015	Prof. Tetsuya Konishi, Scientist Professor, Department of Functional and Analytical Food Sciences, Niigata University of Pharmacy & Applied Life Sciences, Japan.	Is there any diference in the mode of action between drug and food factors?
21.03.2015	Dr. Debasish Pahari, R&D Officer, Shree Baidya Nath Ayurved Bhawan Pvt. Ltd.	Applications of alternative medicine in modern healthcare system.
21.03.2015	Mr. Manoj Saha, Product Manager, Stadmed Pvt. Ltd.	The Challenge of Pharmaceutical marketing in digital world.

4.3.2 Organisation of paper contests, design contests, etc. and achievements (3) Institute Marks 2.00

(Instruction: The institution may provide data for past three years)

The institute organized various contests in the campus like -

- Extempore
- Debate

4.3.3 Publication of technical magazines, newsletters, etc. (3) Institute Marks 2.00

NCPT publishes its own journal with ISSN No. Eminent scientists from various organizations contributed with their research work in those journals, including scientists from Centre for Cellular and Molecular Biology, Jadavpur University and many more.

A wall magazine is published bimonthly by NCPT students.

4.3.4 Entrepreneurship initiatives, product designs, and innovations (3) Institute Marks 2.00

(Instruction: The institution may specify the efforts and achievements.)

The students having degree or diploma of pharmacy are qualified enough to establish own business of Retail or Wholesale shops of medicines utilising their names as the Licensee under the Directorate of drugs control dept., W.B.

Accordingly students after attainment of the degree in pharmacy have entered in the following enterpreneurship areana:

1. entered into manufacturing of ayurvedic medicines for sale

2. entered ino retail business i.e. joined family owned retail medicine shops

3. entered into health care service like nursing home

4.3.5 Publications and awards in inter-institute events by students of the programme of study (3) Institute Marks 2.00

(Instruction: The institution may provide a table indicating those publications, which fetched awards to students in the events/conferences organised by other institutes. A tabulated list of all other student publications may be included in the appendix.)

Ms Pragati Tripathi, won the 1st prize in the model competition in SPIRIT 2013 at IIT-BHU, Varanasi. In SPIRIT 2014, Ms Tripathi again won the 1st prize in the poster presentation and Mr Anuj Kaushal stood second in the model competition in the same event. Ms Tripathi also won the IPA scholarship of Rs. 5,000/- on the same year, awarded by Indian Pharmaceutical Association, Bengal branch, along with Ms Priyanka Ghosh and Ms Sulagna Kar Bhowmik. In 2015, Ms Priyanka Ghosh again won the IPA scholarship along with Ms Shreyashree Majumdar and Ms Moumita Halder.

5 Faculty Contributions (175) **Total Marks 111.32**

List of Faculty Members: Exclusively for the Programme / Shared with other Programmes

(Instruction: The institution may complete this table for the calculation of the student-teacher ratio (STR). Teaching loads of the faculty member contributing to only undergraduate programme (2nd, 3rd, and 4th year) are considered to calculate the STR.)

For CAYm2 2012-2013

Name of the faculty member	Highest Qualification	University	Year of graduation	Designation	date of joining the institution	Distribution of teaching load (%)		Number of research publications in journals and conferences	IPRs	R&D and consultancy work with amount		Holding an incubation unit	Interaction with outside world
						UG	PG			Funding Agency	Amount		
Bijaya Ghosh	PhD	Jadavpur	1983	Professor	24/09/2010	18.52	81.48	0	Copyrights	None	0.00	0	Institution of eminence in India
Goutam Pramanik	PhD	Jadavpur	1982	Professor	01/02/2011	11.11	88.89	0	NO IPRs	None	0.00	0	Institution of eminence in India
Tapan Kr. Barman	PhD	Jadavpur	1973	Professor	15/06/2011	47.83	52.17	0	NO IPRs	None	0.00	0	None
Tapas Kr. Pal	M.Pharm	Jadavpur	1978	Professor	27/08/2007	82.61	17.39	0	NO IPRs	None	0.00	0	None
Debasis Dutta	M.Pharm	Jadavpur	1977	Professor	16/06/2008	90.91	9.09	0	NO IPRs	None	0.00	0	None
Sekhar Kr. Bose	PhD	Jadavpur	1980	Associate Professor	01/08/2008	76.00	24.00	0	NO IPRs	None	0.00	0	None
Souvik Roy	PhD	Jadavpur	2000	Associate Professor	15/06/2011	26.67	73.33	2	NO IPRs	None	0.00	0	Institution of eminence in India
Musfiqua Mookerjee	PhD	Jadavpur	1983	Assistant Professor	01/11/2007	74.19	25.81	0	NO IPRs	None	0.00	0	None
Gopa Roy Biswas	PhD	Jadavpur	1994	Assistant Professor	01/07/2010	86.67	13.33	0	Copyrights	None	0.00	0	None
Satarupa Acharjee	M.Pharm	Jadavpur	2003	Assistant Professor	01/08/2007	87.88	12.12	0	NO IPRs	None	0.00	0	None
K. Dhanabal	M.Pharm	Jadavpur	2003	Assistant Professor	01/08/2007	77.14	22.86	0	NO IPRs	None	0.00	0	None
Sibram Paria	M.Pharm	Jadavpur	1985	Assistant Professor	10/04/2007	92.86	7.14	1	NO IPRs	None	0.00	0	None
Kaushik Biswas	M.Pharm	Jadavpur	2003	Assistant Professor	01/07/2010	16.67	83.33	0	NO IPRs	None	0.00	0	None
Moumita Das Kirtania	M.Pharm	Jadavpur	2005	Assistant Professor	01/09/2008	14.29	85.71	0	NO IPRs	None	0.00	0	None
Shyamoshree Basu	PhD	Jadavpur	2005	Assistant Professor	01/07/2010	91.67	8.33	0	NO IPRs	None	0.00	0	None
Santanu Sannigrahi	M.Pharm	Biju Patnaik University of Technology	2003	Assistant Professor	06/07/2010	14.29	85.71	0	NO IPRs	None	0.00	0	None
Angshuman Lahiri	M.Pharm	Jadavpur	2001	Assistant Professor	15/06/2010	77.78	22.22	0	NO IPRs	None	0.00	0	None
Swarupananda Mukherjee	M.Pharm	RGUHS, Bangalore	2004	Assistant Professor	01/07/2010	83.33	16.67	1	NO IPRs	None	0.00	0	None
Sutapa Biswas Majee	PhD	Jadavpur	1995	Assistant Professor	01/09/2005	80.67	19.35	0	Copyrights	None	0.00	0	Institution of eminence in India
Supriya Mana	M.Pharm	Rajiv Gandhi University of Health Science,	2006	Assistant Professor	17/05/2010	55.56	44.44	0	Copyrights	None	0.00	0	None

		Karnataka										
Tushi Chakravarty	M.Pharm	Jadavpur	2002	Assistant Professor	01/02/2008	25.00 75.00	0	NO IPRs	None	0.00	0	None
Subhasis Maity	PhD	Jadavpur	1988	Assistant Professor	01/01/2003	66.67 33.33	0	NO IPRs	None	0.00	0	None
Sauvik Bhattacharyya	M.Pharm	Jadavpur	2002	Assistant Professor	02/04/2007	8.33 91.67	0	NO IPRs	None	0.00	0	None
Sajal Roychoudhury	PhD	Jadavpur	1970	Professor	22/08/2012	33.33 66.67	0	NO IPRs	None	0.00	0	None
Samit Bera	M.Pharm	Jadavpur	2007	Assistant Professor	02/07/2012	80.65 19.35	0	NO IPRs	None	0.00	0	None
Shyamshree Manna	M.Pharm	RTM, Nagpur University	2001	Assistant Professor	02/01/2012	25.00 75.00	0	NO IPRs	None	0.00	0	None
Ramesh Kumari Dasgupta	M.Pharm	Punjab University	1997	Assistant Professor	15/07/2011	18.18 81.82	0	NO IPRs	None	0.00	0	None
Dhrubajyoti Sarkar	M.Pharm	The Tamilnadu Dr.MGR Medical University,Chennai	2002	Assistant Professor	08/07/2010	100.00 0.00	0	NO IPRs	None	0.00	0	None

For CAYm1 2013-2014

Name of the faculty member	Highest Qualification	University	Year of graduation	Designation	date of joining the institution	Distribution of teaching load (%)		Number of research publications in journals and conferences	IPRs	R&D and consultancy work with amount		Holding an incubation unit	Interaction with outside world
						UG	PG			Funding Agency	Amount		
Bijaya Ghosh	PhD	Jadavpur	1983	Professor	24/09/2010	13.04	86.96	1	Copyrights	None	0.00	0	Institution of eminence in India
Goutam Pramanik	PhD	Jadavpur	1982	Professor	01/02/2011	82.61	17.39	0	NO IPRs	None	0.00	0	None
Tapan Kr. Barman	PhD	Jadavpur	1973	Professor	15/06/2011	50.00	50.00	0	NO IPRs	None	0.00	0	None
Santanu Sannigrahi	M.Pharm	Biju Patnaik University of Technology	2003	Assistant Professor	06/07/2010	81.82	18.18	0	NO IPRs	None	0.00	0	None
Angshuman Lahiri	M.Pharm	Jadavpur	2001	Assistant Professor	15/06/2010	93.33	6.67	0	NO IPRs	None	0.00	0	None
Swarupananda Mukherjee	M.Pharm	RGUHS, Bangalore	2004	Assistant Professor	01/07/2010	88.46	11.54	2	NO IPRs	None	0.00	0	None
Kaushik Biswas	M.Pharm	Jadavpur	2003	Assistant Professor	01/07/2010	16.67	83.33	0	NO IPRs	None	0.00	0	None
Moumita Das Kirtania	M.Pharm	Jadavpur	2005	Assistant Professor	01/09/2008	14.29	85.71	0	NO IPRs	None	0.00	0	None
Musfiqua Mookerjee	PhD	Jadavpur	1983	Assistant Professor	01/11/2007	88.00	12.00	1	NO IPRs	None	0.00	0	None
Dhrubajyoti Sarkar	M.Pharm	The Tamilnadu Dr.MGR Medical University,Chennai	2002	Assistant Professor	08/07/2010	100.00	0.00	0	Copyrights	None	0.00	0	None
Shyamoshree Basu	PhD	Jadavpur	2005	Assistant Professor	01/08/2010	90.00	10.00	0	NO IPRs	state agency/ private sector	283000.00	0	None
K. Dhanabal	M.Pharm	Jadavpur	2003	Assistant Professor	01/08/2007	86.67	13.33	0	NO IPRs	None	0.00	0	None
Sekhar Kr. Bose	PhD	Jadavpur	1980	Associate Professor	01/08/2008	82.76	17.24	0	NO IPRs	None	0.00	0	None
Supriya Mana	M.Pharm	Rajiv Gandhi University of Health Science, Karnataka	2006	Assistant Professor	17/05/2010	58.62	41.38	0	NO IPRs	None	0.00	0	None
Sutapa Biswas Majee	PhD	Jadavpur	1995	Assistant Professor	01/09/2005	82.76	17.24	2	NO IPRs	None	0.00	0	Institution of eminence in India
Satarupa Acharjee	M.Pharm	Jadavpur	2003	Assistant Professor	01/08/2007	100.00	0.00	1	NO IPRs	None	0.00	0	Institution of eminence in India
Debasis Dutta	M.Pharm	Jadavpur	1977	Professor	16/06/2008	96.15	3.85	0	NO IPRs	None	0.00	0	None
Sibram Paria	M.Pharm	Jadavpour	1985	Assistant Professor	10/04/2007	100.00	0.00	0	NO IPRs	None	0.00	0	None
Tushi Chakravarty	M.Pharm	Jadavpur	2002	Assistant Professor	01/02/2008	25.00	75.00	0	NO IPRs	None	0.00	0	None
Tapas Kr. Pal	M.Pharm	Jadavpur	1978	Professor	27/08/2007	95.45	4.55	1	NO IPRs	None	0.00	0	None
Subhasis Maity	PhD	Jadavpur	1988	Professor	01/01/2003	80.00	20.00	0	NO IPRs	None	0.00	0	None
Sauvik Bhattacharyya	M.Pharm	Jadavpur	2002	Assistant Professor	02/04/2007	100.00	0.00	0	NO IPRs	None	0.00	0	None

Samit Bera	M.Pharm	Jadapur	2007	Assistant Professor	02/07/2012	93.33	6.67	0	NO IPRs	None	0.00	0	None
Ramesh Kumari Dasgupta	M.Pharm	Punjab University	1997	Assistant Professor	15/07/2011	29.41	70.59	0	NO IPRs	None	0.00	0	None
Subhas Maity	M.Pharm	Jadavpur	1997	Assistant Professor	01/01/2003	14.29	85.71	0	NO IPRs	None	0.00	0	None
Silpi Lipas Mishra	M.Pharm	Biju Patnayak University & Technology	2007	Assistant Professor	01/01/2013	25.00	75.00	0	NO IPRs	None	0.00	0	None
Sukanya Patra	PhD	Jadavpur	2000	Assistant Professor	01/01/2013	33.33	66.67	0	NO IPRs	None	0.00	0	None
Partha Palit	PhD	Jadavpur	2000	Associate Professor	01/01/2013	25.00	75.00	0	NO IPRs	None	0.00	0	None
Debasish Bhattacharjee	M.Pharm	Jadavpur	1988	Associate Professor	01/01/2013	25.00	75.00	0	NO IPRs	None	0.00	0	None
Gopa Roy Biswas	PhD	Jadavpur	1994	Assistant Professor	01/07/2010	90.00	10.00	0	NO IPRs	None	0.00	0	None
Sajal Roychoudhury	PhD	Jadavpur	1970	Professor	22/08/2012	33.33	66.67	0	NO IPRs	None	0.00	0	None
Souvik Roy	PhD	Berhampur University, Orissa	2000	Associate Professor	15/06/2011	21.43	78.57	2	NO IPRs	None	0.00	0	None

For CAY 2014-2015

Name of the faculty member	Highest Qualification	University	Year of graduation	Designation	date of joining the institution	Distribution of teaching load (%)		Number of research publications in journals and conferences	IPRs	R&D and consultancy work with amount		Holding an incubation unit	Interaction with outside world
						UG	PG			Funding Agency	Amount		
Bijaya Ghosh	PhD	Jadavpur	1983	Professor	24/09/2010	16.67	83.33	0	NO IPRs	None	0.00	0	Institution of eminence in India
Goutam Pramanik	PhD	Jadavpur	1982	Professor	01/02/2011	92.86	7.14	0	NO IPRs	None	0.00	0	None
Santanu Sannigrahi	M.Pharm	Biju Patnaik University of Technology	2003	Assistant Professor	06/07/2010	75.00	25.00	0	NO IPRs	None	0.00	0	None
Angshuman Lahiri	M.Pharm	Jadavpur	2001	Assistant Professor	15/06/2010	94.29	5.71	0	NO IPRs	None	0.00	0	None
Gopa Roy Biswas	M.Pharm	Jadavpur	1994	Assistant Professor	01/07/2010	9.67	3.33	3	Copyrights	None	0.00	0	None
Kaushik Biswas	M.Pharm	Jadavpur	2003	Assistant Professor	01/07/2010	57.14	42.86	0	NO IPRs	None	0.00	0	None
Moumita Das Kirtania	M.Pharm	Jadavpur	2005	Assistant Professor	01/09/2008	88.24	11.76	0	NO IPRs	None	0.00	0	None
Musfiqua Mookerjee	PhD	Jadavpur	1983	Assistant Professor	01/11/2007	96.67	3.33	0	NO IPRs	None	0.00	0	None
Dhrubajyoti Sarkar	M.Pharm	The Tamilnadu Dr.MGR Medical University,Chennai	2002	Assistant Professor	06/07/2010	94.12	5.88	0	NO IPRs	None	0.00	0	None
Shyamoshree Basu	PhD	Jadavpur	2005	Assistant Professor	01/07/2010	62.50	37.50	0	NO IPRs	None	0.00	0	None
K. Dhanabal	M.Pharm	The Tamil Nadu Dr. M.G.R Medical University - Chennai, Tamil Nadu	2003	Assistant Professor	01/08/2007	100.00	0.00	0	NO IPRs	None	0.00	0	None
Sekhar Kr. Bose	PhD	Jadavpur	1980	Associate Professor	01/08/2008	96.77	3.23	0	NO IPRs	None	0.00	0	None
Swarupananda Mukherjee	M.Pharm	RGUHS, Bangalore	2004	Assistant Professor	01/07/2010	90.00	10.00	0	NO IPRs	None	0.00	0	None
Supriya Mana	M.Pharm	Rajiv Gandhi University of Health Science, Karnataka	2006	Assistant Professor	17/05/2010	90.00	10.00	0	NO IPRs	state agency/ private sector	500000.00	0	Institution of eminence in India
Sutapa Biswas Majee	M.Pharm	Jadavpur	1995	Associate Professor	01/09/2005	87.50	12.50	2	NO IPRs	None	0.00	0	Institution of eminence in India
Satarupa Acharjee	M.Pharm	AISSMS college of pharmacy,Pune	2003	Assistant Professor	01/08/2007	100.00	0.00	0	NO IPRs	None	0.00	0	None
Debasis Dutta	M.Pharm	Jadavpur	1977	Professor	16/06/2008	93.10	6.90	0	NO IPRs	None	0.00	0	None
Sibram Paria	M.Pharm	Jadavpur	1985	Assistant Professor	10/04/2007	100.00	0.00	0	NO IPRs	None	0.00	0	None
Tushi Chakravarty	M.Pharm	Jadavpur	2002	Assistant Professor	01/02/2008	83.33	16.67	0	NO IPRs	None	0.00	0	None
Tapas Kr. Pal	M.Pharm	Jadavpur	1978	Assistant Professor	27/08/2007	91.67	8.33	2	NO IPRs	None	0.00	0	Institution of eminence

												in India
Subhasis Maity	PhD	Jadavpur	1988	Professor	01/01/2003	85.71 14.29	0	NO IPRs	None	0.00	0	None
Sauvik Bhattacharyya	M.Pharm	Jadavpur	2002	Assistant Professor	02/04/2007	100.00 0.00	0	NO IPRs	None	0.00	0	None
Tapan Kr. Barman	PhD	Jadavpur	1973	Professor	15/06/2011	66.67 33.33	0	NO IPRs	None	0.00	0	None
Souvik Roy	PhD	Berhampur University, Orissa	2000	Associate Professor	15/06/2011	60.00 40.00	1	NO IPRs	None	0.00	0	Institution of eminence in India
Samit Bera	M.Pharm	Jadavpur	2007	Assistant Professor	02/07/2012	96.30 3.70	0	NO IPRs	None	0.00	0	None
Sajal Roychoudhury	PhD	Jadavpur	1970	Professor	22/08/2012	85.71 14.29	0	NO IPRs	None	0.00	0	None
Ramesh Kumari Dasgupta	M.Pharm	Punjab University	1997	Assistant Professor	15/07/2011	25.00 75.00	0	NO IPRs	None	0.00	0	None
Subhas Maity	M.Pharm	Jadavpur	1997	Assistant Professor	01/01/2013	66.67 33.33	0	NO IPRs	None	0.00	0	None
Silpi Lipsa Mishra	M.Pharm	Biju Patnayak University & Technology	2007	Assistant Professor	01/01/2013	25.00 75.00	0	NO IPRs	None	0.00	0	None
Sukanya Patra	PhD	Jadavpur	2000	Assistant Professor	01/01/2013	33.33 66.67	0	NO IPRs	None	0.00	0	None
Debasish Bhattacharjee	M.Pharm	Jadavpur	1988	Associate Professor	01/01/2013	80.00 20.00	0	NO IPRs	None	0.00	0	None
Tapan Kr. Giri	PhD	Jadavpur	1999	Assistant Professor	16/09/2013	96.43 3.57	0	NO IPRs	None	0.00	0	Reputed institution abroad
Sandipan Dasgupta	M.Pharm	RIPS, Berhampur, Odisha	2002	Assistant Professor	02/09/2013	96.30 3.70	1	NO IPRs	None	0.00	0	None
Nilanjan Sarkar	M.Pharm	RGUHS (Karnataka)	2006	Assistant Professor	02/09/2013	96.00 4.00	1	NO IPRs	None	0.00	0	None
Partha Palit	PhD	Jadavpur University	2000	Associate Professor	01/01/2013	55.56 44.44	0	NO IPRs	None	0.00	0	None

5.1 Student-Teacher Ratio (STR) (20)

Total Marks 20.00

Institute Marks 20.00

For Item nos. 5. 2 to 5. 8, the denominator term (N) is computed as follows:

STR is desired to be 15 or superior
Assessment = 20 × 15/STR; subject to maximum assessment of 20
STR = (a + b + c + d)/N1
where, a = Number of students in 1st year of the programme
b = Number of students in 2nd year of the programme
c = Number of students in 3rd year of the programme
d = Number of students in 4th year of the programme
N1 = Total number of faculty members in the programme (by considering fractional load)

N = Maximum {N1, N2}
N1 = Total number of faculty members in the programme (considering the fractional load)
N2 = Number of faculty positions needed for student-teacher ratio of 15.

Year	a	b	c	d	N1	STR	Assessment
2012-2013	58	63	58	44	16	13.94	20.00
2013-2014	118	67	62	53	20	15.00	20.00
2014-2015	119	139	66	65	27	14.41	20.00

Average assessment 20.00

N = Maximum {N1, N2}
N1 = Total number of faculty members in the programme (considering the fractional load)
N2 = Number of faculty positions needed for student-teacher ratio of 15

Year	Sanctioned Intake	Actual Admitted	N1	N2	N=Max.(N1,N2)
2012-2013	240	223	16	16	16
2013-2014	300	300	20	20	20
2014-2015	360	389	27	26	27

5.2 Faculty Cadre Ratio (20)

Total Marks 20.00

Institute Marks 20.00

Assessment = 20 × CRI
where, CRI = Cadre ratio index
= 2.25 × (2x + y)/N; subject to max. CRI = 1.0

where, x = Number of professors in the programme
y = Number of associate professors in the programme programme

Year	x	y	N	CRI	Assessment
2012-2013	6	2	16	1.00	20.00
2013-2014	7	4	20	1.00	20.00
2014-2015	6	5	27	1.00	20.00

Average assessment 20.00

5.3 Faculty Qualifications (30)

Total Marks 29.92

Institute Marks 29.92

Assessment = 3 × FQI
where, FQI = Faculty qualification index
= (10x + 6y)/N

where, x = Number of faculty members with PhD
y = Number of faculty members with M.Pharm

	X	Y	N	FQI	Assessment
2012-2013	11	17	16	10.00	30.00
2013-2014	13	19	20	10.00	30.00
2014-2015	12	23	27	9.92	29.76

Average assessment 29.92

5.4 Faculty Competencies correlation to Programme Specific Criteria (15)

Total Marks 15.00

Institute Marks 15.00

(Provide evidence that programme curriculum satisfies the applicable programme criteria specified by the NBA. You may list the programme specific criteria and the competencies, such as specialisation, research publication, course developments etc., of faculty to correlate the programme specific criteria and competencies.)

Sl.no.	Domain Area (Course Title)	Programme Curriculum (Subject Codes)	Related Programme Outome	Faculties
1	Mathematics	M-103, M-203	PO - 1, 2, 10	Dr. Provangshu Sekhar Das, D Sc (Maths.) Mr. Ashutosh Kar, M Sc, M Phill
2	Computer Application	CS-303, CS-393, PT-610A, PT-691A	PO - 1, 9, 11	Mr.Atri Sanyal, M Sc , M Tech Mr.Sanjoy Pal M Tech, MCA
3	Humanities	HU-101	PO - 9	Dr. Soujanya Puri, MA, PhD Mrs. Suchandra Chakraborty
4	Environment & Ecology	HU-202	PO - 7	Mr.Nilanjan Sarkar, M Pharm Mr.Sandipan Dasgupta, M Pharm
5	Biology	PTB-101, PTB-191	PO - 1, 6	Dr. Musfiqua Mookerjee, M Pharm, PhD Mr. Dhrubajyoti Sarkar, M Pharm
6	Anatomy, Physiology & Health Education	PT-205, PT-295,, PT-305, PT- 405	PO - 1, 7	Mr.Nilanjan Sarkar, M Pharm Mr.Sandipan Dasgupta, M Pharm Dr. Souvik Roy, M Pharm, PhD Mr. Supriya Mana, M Pharm Mr. Somit Bera, M Pharm
7	Chemistry	PT-103, PT-193, PT-204, PT-294, PT-203, PT-293, PT-304, PT-394	PO - 2, 3, 4, 7	Prof. (Dr.) Goutam Pramanik, M Pharm, PhD Mr. Sibram Paria, M Pharm Mrs.Satarupa Acharaya, M Pharm Mr.K.Dhanabal, M Pharm
8	Pharm Engineering	PT- 307, PT-397, PT-407,	PO - 1, 2, 3, 4, 5	Dr. Tapan Giri, M Pharm, PhD

		PT-497, PT-507, PT-597		Dr. Miltu Ghosh, M Pharm, PhD
				Mr.Swrupananda Mukherjee, M Pharm
9	Biochemistry	PT-404, PT-494, PT-504	PO - 1, 2, 3, 4	Mr. Sibram Paria, M Pharm
				Mr. Angshuman Lahiri, M Pharm
10	Microbiology & Biotechnology	PT-509, PT-599, PT-609, PT-610B, PT-691B	PO - 1, 2, 3, 4, 7, 11	Dr. Musfiqua Mookerjee, M Pharm, PhD
				Dr. Shekhar Kumar Bose, M Pharm, PhD
11	Pharm Analysis	PT-101, PT-191, PT-301, PT-391, PT-801, PT-891	PO - 1, 2, 3, 4, 5, 10, 11	Prof. (Dr.) Goutam Pramanik, M Pharm, PhD
				Prof.(Dr.) Sajal Roychowdhury, M Pharm, PhD
				Mrs.Satarupa Acharaya, M Pharm
12	Medicinal Chemistry	PT-503, PT- 593, PT- 603, PT-693, PT-703, PT-793	PO - 1, 2, 3, 4, 7, 11	Prof. (Dr.) Goutam Pramanik, M Pharm, PhD
				Mr. Sibram Paria, M Pharm
				Mrs.Satarupa Acharaya, M Pharm
				Mr.K.Dhanabal, M Pharm
13	Pharmacognosy	PT-202, PT-292, PT-402, PT-492, PT-702, PT-709B	PO - 1, 2, 3, 4	Dr. Shekhar Kumar Bose, M Pharm, PhD
				Mr. Dhrubajyoti Sarkar, M Pharm
14	Pharm Technology	PT-106, PT-196, PT-306,PT-396, PT-406, PT-496, PT-506, PT- 596, PT-606, PT-696, PT-611, PT-697	PO - 1, 2, 3, 4, 5, 6, 8, 11	Prof. (Dr.) Bijaya Ghosh, M Pharm, PhD
				Prof. T.K. Pal, M Pharm
				Prof. Debasis Dutta, M Pharm
				Dr. Sutapa Biswas Majee, M Pharm, PhD
				Dr. Gopa Roy Biswas, M Pharm, PhD
				Dr. Miltu Kr. Bose, M Pharm, PhD
				Mr.Swrupananda Mukherjee, M Pharm
15	Pharmacology	PT-508, PT-608, PT-698, PT-708	PO - 1, 2, 3, 4, 6, 11	Prof. (Dr.) T.K. Barman, M Pharm, PhD
				Dr. Souvik Roy, M Pharm, PhD
				Mr. Nilanjan Sarkar, M Pharm
				Mr. Supriya Mana, M Pharm
				Mr. Sandipan Dasgupta, M Pharm
				Mr. Samit Bera, M Pharm
16	Hospital Pharmacy & Clinical Pharmacy	PT-818	PO - 1, 5, 6, 7, 8, 11	Dr. Sutapa Biswas Majee, M Pharm, PhD
				Dr. Souvik Roy, M Pharm, PhD
17	Pharm Management	PT-812, PT-709C	PO - 1, 5, 11	Mr. Rajkumar Dasgupta, MBA
				Ms. Nilanjana Sinha, MBA
18	Pharm Jurisprudence & Ethics	PT-813	PO - 1, 8	Prof. T.K. Pal, M Pharm
				Prof. Debasis Dutta, M Pharm
				Prof.(Dr.) Sajal Roychowdhury, M Pharm, PhD

Competencies of Faculty Members

Faculty Member	Specialisation, Domain Exposure & Publications
Prof. (Dr.) Subhasis Maity, Director	M.Pharm in Pharmaceutics & Ph.D from Jadavpur University, an eminent professional. Prof. Maity served Pharmaceutical industry for 8 years and teaching for 16 years being in different responsible positions. He is an Ex-Controller of Examinations of West Bengal University of Technology. He is academic consultant of Gyatri College of Pharmaceutical Science, Sambalpur and Indira Gandhi College of Pharmaceutical Science, Bhubaneswar. He is also GMP Consultant of different pharmaceutical industries. He was an ISO lead auditor of Det Norske Veritas, Norway.
Prof. (Dr.) T.K. Barman, M Pharm, PhD Principal	M.Pharm in Pharmacology as well as Ph.D from Jadavpur University. He has 33 years of teaching and administrative experience as Principal of Govt. Institute of Pharmacy, Jalpaiguri, West Bengal. He has many research papers published in reputed journal.
Prof.(Dr.) Sajal Roychowdhury, M Pharm, PhD	M.Pharm in Phamaceutcal Chemistry as well as Ph.D from Jadavpur University. He has 30 years of industrial experienced. He served as Administrative Head of DDC, West Bengal. He has several international and national publications.
Prof. (Dr.) Bijaya Ghosh, M Pharm, PhD	M.Pharm in Phamaceutics as well as Ph.D from Jadavpur University. She has 26 years of teaching experienced and taught in premier institutions of both North & /South India. She has published more than 30 research and review papers in peer-reviewed national and international and published three books on various topics related to Pharmacy.
Prof. T.K. Pal, M Pharm	M.Pharm in Phamaceutics from Jadavpur University, He has over 20 years Industrial experience and 14 years of Acedemic experience. Has submitted his PhD thesis in WBUT. Many research publications in reputed journals Specialisation area : Dosage Form Development, NDDS, Pharmaceutical Legislation & Regulatory Affairs.
Prof. Debasis Dutta, M Pharm	M.Pharm in Phamaceutics from Jadavpur University, He has years experience in reputed multinational pharmaceutical industry and 8 years of teaching experience. He is pursuing Ph.D from WBUT. Specialisation area : Dosage Form Development, Drug Delivery, Quality System
	M.Pharm (Pharmaceutics), Ph.D and Post Doctorate from Jadavpur University. She is a gold medalist in

Dr. Sutapa Biswas Majee	both B.Pharm & M.Pharm. She has more than 10 years of experience in teaching and has several national and international publications. She also published several book chapter and presented in various national and international conferences.
Dr. Gopa Roy Biswas, M Pharm, PhD	M.Pharm (Pharmaceutics) and Ph.D from Jadavpur University. She has an experience of 14 years in teaching. She has more than 20 publications in National and International Journals.
Dr. Tapan Kumar Giri, M Pharm, PhD	M.Pharm in pharmaceutics and Ph.D from Jadavpur university. He has 12 years of teaching experience and published more than 40 research & review papers in peer-reviewed national and international journals. One book chapter published and two book chapters accepted for publication.
Dr. Miltu Kumar Ghosh, M Pharm, PhD	M.Pharm in pharmaceutics and Ph.D from Jadavpur university. He is former Erasmus Mundus fellow (Germany), Dept. of Human genetics, Georg-August-Universität Göttingen. He has more than 1 years of teaching experience and published 7 research & review papers in peer-reviewed national and international journals. He has published one book chapter. He has also worked in CDSCO as TDA.
Mr.Swrupananda Mukherjee, M Pharm	M.Pharm (Pharmaceutics) from Rajiv /Gandhi University of Health Sciences, Karnataka. He has an experience of 7 years in teaching. He is pursuing Ph.D from WBUT. He has more than 20 publications in reputed Journals.
Dr. Souvik Roy, M Pharm, PhD	M.Pharm (Pharmacology)and Ph.D from Jadavpur University. He has more than 8 Years of teaching experience and published more than 20 research papers in different international and national journals.
Mr. Nilanjan Sarkar, M Pharm	M.Pharm (Pharmacology) from WBUT. He has more than 5 years of experience in teaching. He has 4 International paper publication and attended several national and international conferences. Persuing his PhD in Jadavpur University, Kolkata.
Mr. Sandipan Dasgupta, M Pharm	M.Pharm (Pharmacology) from BPUT, Orissa and submitted his Ph.D thesis in Dibrugarh University, Assam. He has more than 5 years of teaching experience and 3 years of industrial experience. He has 3 National and 7 International publications.
Mr. Supriya Mana, M Pharm	M.Pharm (Pharmacology) from Rajiv Gandhi University of Health Sciences, Karnataka. He has an experience of 5 years in teaching. He is pursuing Ph.D from WBUT.
Mr. Samit Bera, M Pharm	M.Pharm (Pharmacology) from Jadavpur University. He has 5 years teaching experience. He has 4 publications (3 National & 1 International)
Prof. (Dr.) Goutam Pramanik, M Pharm, PhD	M.Pharm in Pharmaceutical Chemistry as well as Ph.D from Jadavpur University. He has 15 years working experience in the Quality Control Department of various companies in the Pharmaceutical industry and 18 years of teaching experience. He has several research publications in reputed journals.
Mr. Sibram Paria, M Pharm	M.Pharm (Pharmaceutical Bio Chemistry) from Jadavpur University and has an experience of 18 years in industry and 10 years in teaching. He has 2 publications and is pursuing Ph.D from WBUT.
Mrs.Satarupa Acharaya, M Pharm	M.Pharm (Pharmaceutical Chemistry) from Pune University and is pursuing Ph.D from Jadavpur University. She has an experience of 9 years in teaching. Published one pepar in international Journal.
Mr.K.Dhanabal, M Pharm	M.Pharm (Pharmaceutical /Chemistry) from Tamil Nadu Dr. M.G. Medical University, Chennai. He has one year research experience & 9 years in teaching experience and is pursuing Ph.D from WBUT. He has 8 publications and 10 conference presentations.
Mr. Angshuman Lahiri, M Pharm	M.Pharm (/Applied Bio-chemistry) from Jadavpur University. He has an experience of 10 years in teaching and 1 year in industry. He is associated with professional organizations like IPA, IPGA, ISCA, APTI & ICSS.
Dr. Shekhar Kumar Bose, M Pharm, PhD	M.Pharm(Microbiology)and Ph.D from Jadavpur University. He has an experience of 10 years in Industry and 21 years in teaching. He has 6 publications and 8 conference publications. He has guided 4 M.Pharm students (North Bengal University)
Mr. Dhrubajyoti Sarkar, M Pharm	M.Pharm (Pharmacognosy) from J.S.S. College of Pharmacy, Ooty. He has 10 Years of teaching experience and is pursing Ph.D from WBUT. He has several national and international publications.He also published book on standerization of herbal drugs.
Dr. Musfiqua Mookerjee, M Pharm, PhD	M.Pharm (Microbiology), Ph.D and Post Doctorate from Jadavpur University. She is a gold medalist in B.Pharm. She has an experience of 11 years in research, 5 years in industry and more than 9 years in teaching. She has 20 publicatons and 20 conference presentation. As a WBUT- Ph.D guide , she is currently supervising 3 candidates in their doctoral studies.
Dr. Provangshu Sekhar Das, D.Sc (Maths.)	M Sc & PhD in Applied Mathematics, D Sc in Maths. from Kalyani University. Has several Research & Review publications in national & International Journals. Over 30 years of academic experience.
Mr. Ashutosh Kar, M Sc, M Phill	M Sc in Maths from Annamalai University, M Phill from Burdawan University, He has more than 10 publications in reputed Journals. Teaching experiene - 13 years
Mr.Atri Sanyal, Msc, ME,	ME (CSE) from WBUT and M Sc(Comp. Sc) from BHU, He has 10 years of teacing experience.
Mr.Sanjoy Pal	M Tech, MCA, He has more than 40 publications in reputed journals and authored one text book.13 years in industry and over 10 years of teaching experience.
Mr. Rajkumar Dasgupta, MBA	B.Sc, MBA (Marketing), He has 11 years of industrial experience and over 10 years of academic experience. Has about 10 Journal Publications.
Ms. Nilanjana Shinha	B.Sc (Eco),MBA (Marketing), Pursuing PhD from Calcutta University. She has over 10 years of acedemic experience. She has several publications in Journals.
Dr. Soujanya Puri, MA, PhD	MA, PhD in English Language & Literature, Post Graduate Diploma in Teaching of English (CIEFI), She has over 15 years of teaching experience. She has presented in 10 National & International conferences.

5.5 Faculty as participants/resource persons in faculty development/training activities (15) **Total Marks 0.75**

Institute Marks 0.75

(Instruction: A faculty member scores maximum five points for a participation/resource person.)

File Name
FACULTY DEVELOPMENT PROGRAMME

Participant/resource person in two week faculty development programme : 5 points
Participant/resource person in one week faculty development programme : 3 Points

Name of the faculty	max. 5 per faculty		
	2012-2013	2013-2014	2014-2015
Angshuman Lahiri	0.00	0.00	0.00
Bijaya Ghosh	0.00	0.00	0.00
Debasis Dutta	0.00	0.00	0.00
Debasish Bhattacharjee	0.00	0.00	0.00
Dhrubajyoti Sarkar	0.00	0.00	0.00
Gopa Roy Biswas	0.00	5.00	0.00
Goutam Pramanik	0.00	0.00	0.00
K. Dhanabal	0.00	0.00	0.00
Kaushik Biswas	0.00	0.00	0.00
Moumita Das Kirtania	0.00	0.00	0.00
Musfiqua Mookerjee	0.00	0.00	0.00
Nilanjan Sarkar	0.00	0.00	0.00
Partha Palit	0.00	0.00	0.00
Ramesh Kumari Dasgupta	0.00	0.00	0.00
Sajal Roychoudhury	0.00	0.00	0.00
Samit Bera	0.00	5.00	0.00
Sandipan Dasgupta	0.00	0.00	0.00
Santanu Sannigrahi	0.00	0.00	0.00
Satarupa Acharjee	0.00	0.00	0.00
Sauvik Bhattacharyya	0.00	0.00	0.00
Sekhar Kr. Bose	0.00	0.00	0.00
Shyamoshree Basu	0.00	0.00	0.00
Shyamshree Manna	0.00	0.00	0.00
Sibram Paria	0.00	0.00	0.00
Silpi Lipas Mishra	0.00	0.00	0.00
Silpi Lipsa Mishra	0.00	0.00	0.00
Souvik Roy	0.00	0.00	0.00
Subhas Maity	0.00	0.00	0.00
Subhasis Maity	0.00	0.00	0.00
Sukanya Patra	0.00	0.00	0.00
Supriya Mana	0.00	5.00	0.00
Sutapa Biswas Majee	0.00	0.00	0.00
Swarupananda Mukherjee	0.00	0.00	0.00
Tapan Kr. Barman	0.00	0.00	0.00
Tapan Kr. Giri	0.00	0.00	0.00
Tapas Kr. Pal	0.00	0.00	0.00
Tushi Chakravarty	0.00	0.00	0.00
Sum	0.00	15.00	0.00
N	16.00	20.00	26.00
Assessment = 3 × Sum/N	0.00	2.25	0.00

Average assessment 0.75

5.6 Faculty Retention (15)

Total Marks 15.00

Institute Marks 15.00

Assessment = 3 × RPI/N
where RPI = Retention point index
= Points assigned to all faculty members

where points assigned to a faculty member = 1 point for each year of experience at the institute but not exceeding 5.

Item	2012-2013	2013-2014	2014-2015
Number of faculty members with experience of less than l year (x0)	0.00	0.00	0.00
Number of faculty members with 1 to 2 years experience (x1)	0.00	0.00	0.00
Number of faculty members with 2 to 3 years experience (x2)	0.00	0.00	3.00
Number of faculty members with 3 to 4 years experience (x3)	2.00	6.00	7.00
Number of faculty members with 4 to 5 years experience (x4)	5.00	4.00	4.00
Number of faculty members with more than 5 years experience (x5)	21.00	22.00	21.00
N	16.00	20.00	26.00
RPI = x1 + 2x2 + 3x3 + 4x4 + 5x5	131.00	144.00	148.00
Assessment	15.00	15.00	15.00

Average assessment 15.00

5.7 Faculty Research Publications (FRP) (20) **Total Marks 7.53**

Institute Marks 7.53

(Instruction: A faculty member scores maximum five research publication points depending upon the quality of the research papers and books published in the past three years.)

File Name
Faculty Research Publications

Assessment of FRP = 4 × (Sum of the research publication points scored by each faculty member)/N

The research papers considered are those (i) which can be located on the internet and/or are included in hard-copy volumes/proceedings, published by reputed publishers, and (ii) the faculty member's affiliation, in the published papers/books, is of the current institution.

Include a list of all such publications and IPRs along with details of DOI, publisher, month/year, etc.

Name of the Faculty (contributing to FRP)	FRP points (max. 5 per faculty)		
	2012-2013	2013-2014	2014-2015
Bijaya Ghosh	0.00	5.00	0.00
Angshuman Lahiri	0.00	0.00	0.00
Debasis Dutta	0.00	0.00	0.00
Debasish Bhattacharjee	0.00	0.00	0.00
Dhrubajyoti Sarkar	0.00	0.00	0.00
Gopa Roy Biswas	5.00	5.00	5.00
Goutam Pramanik	5.00	0.00	0.00
K. Dhanabal	0.00	0.00	0.00
Kaushik Biswas	0.00	0.00	0.00
Moumita Das Kirtania	0.00	0.00	0.00
Musfiqua Mookerjee	0.00	5.00	0.00
Nilanjan Sarkar	0.00	5.00	0.00
Partha Palit	0.00	0.00	0.00
Ramesh Kumari Dasgupta	0.00	0.00	0.00
Sajal Roychoudhury	0.00	0.00	0.00
Samit Bera	0.00	0.00	0.00
Sandipan Dasgupta	5.00	5.00	5.00
Santanu Sannigrahi	0.00	0.00	0.00
Satarupa Acharjee	0.00	5.00	0.00
Sauvik Bhattacharyya	0.00	0.00	0.00
Sekhar Kr. Bose	0.00	0.00	0.00
Shyamoshree Basu	0.00	0.00	0.00
Shyamshree Manna	0.00	0.00	0.00
Sibram Paria	5.00	0.00	0.00
Silpi Lipas Mishra	0.00	0.00	0.00
Souvik Roy	5.00	5.00	5.00
Subhas Maity	0.00	0.00	0.00
Subhasis Maity	0.00	0.00	0.00
Sukanya Patra	0.00	0.00	0.00
Supriya Mana	0.00	0.00	0.00
Sutapa Biswas Majee	5.00	5.00	5.00
Swarupananda Mukherjee	5.00	5.00	0.00

Tapan Kr. Barman	0.00	0.00	0.00
Tapan Kr. Giri	0.00	0.00	0.00
Tapas Kr. Pal	0.00	5.00	5.00
Tushi Chakravarty	0.00	0.00	0.00
Sum	35.00	50.00	25.00
N	16.00	20.00	26.00
Assessment of FRP = 4 × Sum/N	8.75	10.00	3.85

Average assessment 7.53

5.8 Faculty Intellectual Property Rights (FIPR) (10) Total Marks 1.13

Institute Marks 1.13

Assessment of FIPR = 2 × (Sum of the FIPR points scored by each faculty member)/N
(Instruction: A faculty member scores maximum five FIPR points each year. FIPR includes awarded national/international patents, design, and copyrights.)

Name of faculty member (contributing to FIPR)	FIPR points (max. 5 per faculty member)		
	2012-2013	2013-2014	2014-2015
Bijaya Ghosh	5.00	5.00	0.00
Angshuman Lahiri	0.00	0.00	0.00
Bijaya Ghosh	0.00	0.00	0.00
Debasis Dutta	0.00	0.00	0.00
Debasish Bhattacharjee	0.00	0.00	0.00
Dhrubajyoti Sarkar	0.00	5.00	0.00
Gopa Roy Biswas	5.00	0.00	5.00
Goutam Pramanik	0.00	0.00	0.00
K. Dhanabal	0.00	0.00	0.00
Kaushik Biswas	0.00	0.00	0.00
Moumita Das Kirtania	0.00	0.00	0.00
Musfiqua Mookerjee	0.00	0.00	0.00
Nilanjan Sarkar	0.00	0.00	0.00
Partha Palit	0.00	0.00	0.00
Ramesh Kumari Dasgupta	0.00	0.00	0.00
Sajal Roychoudhury	0.00	0.00	0.00
Samit Bera	0.00	0.00	0.00
Sandipan Dasgupta	0.00	0.00	0.00
Santanu Sannigrahi	0.00	0.00	0.00
Satarupa Acharjee	0.00	0.00	0.00
Sauvik Bhattacharyya	0.00	0.00	0.00
Sekhar Kr. Bose	0.00	0.00	0.00
Shyamoshree Basu	0.00	0.00	0.00
Shyamshree Manna	0.00	0.00	0.00
Sibram Paria	0.00	0.00	0.00
Silpi Lipas Mishra	0.00	0.00	0.00
Silpi Lipsa Mishra	0.00	0.00	0.00
Souvik Roy	0.00	0.00	0.00
Subhas Maity	0.00	0.00	0.00
Subhasis Maity	0.00	0.00	0.00
Sukanya Patra	0.00	0.00	0.00
Supriya Mana	5.00	0.00	0.00
Sutapa Biswas Majee	5.00	0.00	0.00
Swarupananda Mukherjee	0.00	0.00	0.00
Tapan Kr. Barman	0.00	0.00	0.00
Tapan Kr. Giri	0.00	0.00	0.00
Tapas Kr. Pal	0.00	0.00	0.00
Tushi Chakravarty	0.00	0.00	0.00

Sum	20.00	10.00	5.00
N	19.00	22.00	26.00
Assessment of FIPR = 2 × Sum/N	2.11	0.91	0.38

Average assessment 1.13

5.9 Funded R&D Projects and Consultancy (FRDC) Work (20) **Total Marks 0.47**

Institute Marks 0.47

(Instruction: A faculty member scores maximum 5 points, depending upon the amount.) A suggested scheme is given below for a minimum amount of Rs. 1 lakh:

Assessment of R&D and consultancy projects = 4 × (Sum of FRDC by each faculty member)//N

Five points for funding by national agency,

Four points for funding by state agency,

Four points for funding by private sector, and

Two points for funding by the sponsoring trust/society.

Name of faculty member (contributing to FRDC)	FRDC points (max. 5 per faculty member)		
	2012-2013	2013-2014	2014-2015
Bijaya Ghosh	0.00	0.00	0.00
Angshuman Lahiri	0.00	0.00	0.00
Debasis Dutta	0.00	0.00	0.00
Debasish Bhattacharjee	0.00	0.00	0.00
Dhrubajyoti Sarkar	0.00	0.00	0.00
Gopa Roy Biswas	0.00	0.00	0.00
Goutam Pramanik	0.00	0.00	0.00
K. Dhanabal	0.00	0.00	0.00
Kaushik Biswas	0.00	0.00	0.00
Moumita Das Kirtania	0.00	0.00	0.00
Musfiqua Mookerjee	0.00	0.00	0.00
Nilanjan Sarkar	0.00	0.00	0.00
Partha Palit	0.00	0.00	0.00
Ramesh Kumari Dasgupta	0.00	0.00	0.00
Sajal Roychoudhury	0.00	0.00	0.00
Samit Bera	0.00	0.00	0.00
Sandipan Dasgupta	0.00	0.00	0.00
Santanu Sannigrahi	0.00	0.00	0.00
Satarupa Acharjee	0.00	0.00	0.00
Sauvik Bhattacharyya	0.00	0.00	0.00
Sekhar Kr. Bose	0.00	0.00	0.00
Shyamoshree Basu	0.00	0.00	0.00
Shyamshree Manna	0.00	0.00	0.00
Sibram Paria	0.00	0.00	0.00
Silpi Lipas Mishra	0.00	0.00	0.00
Silpi Lipsa Mishra	0.00	0.00	0.00
Souvik Roy	0.00	0.00	0.00
Subhas Maity	0.00	0.00	0.00
Subhasis Maity	0.00	0.00	0.00
Sukanya Patra	0.00	0.00	0.00
Supriya Mana	0.00	0.00	4.00
Sutapa Biswas Majee	0.00	0.00	0.00
Swarupananda Mukherjee	0.00	0.00	0.00
Tapan Kr. Barman	0.00	0.00	0.00
Tapan Kr. Giri	0.00	4.00	0.00
Tapas Kr. Pal	0.00	0.00	0.00
Tushi Chakravarty	0.00	0.00	0.00
Sum	0.00	4.00	4.00

N	16.00	20.00	26.00
Assessment of FRDC = 4 × Sum/N	0.00	0.80	0.62

Average assessment 0.47

5.10 Faculty Interaction with Outside World (10)

Total Marks 1.52

Institute Marks 1.52

(Instruction: A faculty member gets maximum five interaction points, depending upon the type of institution or R&D laboratory or industry, as follows)

FIP = Faculty interaction points

Assessment = 2 × (Sum of FIP by each faculty member)/N

Five points for interaction with a reputed institution abroad, institution of eminence in India, or national research laboratories,

Three points for interaction with institution/industry (not covered earlier).

Points to be awarded, for those activities, which result in joint efforts in publication of books/research paper, pursuing externally funded R&D / consultancy projects and/or development of semester-long course / teaching modules.

Name of faculty member (contributing to FIP)	FIP		
	2012-2013	2013-2014	2014-2015
Bijaya Ghosh	0.00	0.00	5.00
Angshuman Lahiri	0.00	0.00	0.00
Debasis Dutta	0.00	0.00	0.00
Debasish Bhattacharjee	0.00	0.00	0.00
Dhrubajyoti Sarkar	0.00	0.00	0.00
Gopa Roy Biswas	0.00	0.00	0.00
Goutam Pramanik	0.00	0.00	0.00
K. Dhanabal	0.00	0.00	0.00
Kaushik Biswas	0.00	0.00	0.00
Moumita Das Kirtania	0.00	0.00	0.00
Musfiqua Mookerjee	0.00	0.00	0.00
Nilanjan Sarkar	0.00	0.00	0.00
Partha Palit	0.00	0.00	0.00
Ramesh Kumari Dasgupta	0.00	0.00	0.00
Sajal Roychoudhury	0.00	0.00	0.00
Samit Bera	0.00	0.00	0.00
Sandipan Dasgupta	0.00	0.00	5.00
Santanu Sannigrahi	0.00	0.00	0.00
Satarupa Acharjee	0.00	5.00	0.00
Sauvik Bhattacharyya	0.00	0.00	0.00
Sekhar Kr. Bose	0.00	0.00	0.00
Shyamoshree Basu	0.00	0.00	0.00
Shyamshree Manna	0.00	0.00	0.00
Sibram Paria	0.00	0.00	0.00
Silpi Lipas Mishra	0.00	0.00	0.00
Silpi Lipsa Mishra	0.00	0.00	0.00
Souvik Roy	5.00	0.00	5.00
Subhas Maity	0.00	0.00	0.00
Subhasis Maity	0.00	0.00	0.00
Sukanya Patra	0.00	0.00	0.00
Supriya Mana	0.00	0.00	5.00
Sutapa Biswas Majee	5.00	5.00	5.00
Swarupananda Mukherjee	0.00	0.00	0.00
Tapan Kr. Barman	0.00	0.00	0.00
Tapan Kr. Giri	0.00	0.00	5.00
Tapas Kr. Pal	0.00	0.00	0.00
Tushi Chakravarty	0.00	0.00	0.00

Sum	10.00	10.00	30.00
N	16.00	20.00	26.00
Assessment of FIP = 2 × Sum/N	1.25	1.00	2.31

Average assessment 1.52

6 Facilities and Technical Support (150) **Total Marks 140.00**

Facilities and Technical Support

(Description of class rooms, laboratories, machine room, tutorial rooms, instrument room, faculty rooms, seminar and conference halls, administrative space etc.)

• Teaching & administrative area

Room Description	No. of Rooms	Shared/ Exclusive	Capacity	Dimensions with area	Rooms/Labs Equipped with
Class Room	6	Exclusive	75	505.4 Sq.M	Teaching aids: White board / Green board, LCD Projector & screen, Chair with writing table / desk, tube light, ceiling fan, soft notice board and provision for sound system.
Tutorial Room	2	Exclusive	20	109.68 Sq.M	Teaching aids: White board / Green board, LCD Projector & screen, Chair with writing table / desk, tube light, ceiling fan, soft notice board and provision for sound system.
Seminar Hall/Room	1	Shared (UG & PG)	200	140.18 Sq.M	Air conditioner, LCD Projector & screen, White board, dias and podium with table & Chair, Portable sound system with wireless Mick
Conference Hall	1	Shared (UG & PG)	200	140.18 Sq.M	Air conditioner, LCD Projector & screen, White board, dias and podium with table & Chair, Portable sound system with wireless Mick

Principal's/Head's Chamber	1	Exclusive	10	30.29 Sq.M	One PC & one laptop with internet, one printer cum scanner, telephone & fax, wall mounted racks one white board revolving chairs and tables, visitor Sofa set, two book racks and file cabinets mounted below the tables & two fans along with air conditioner
Office	19	Shared	50	545.47 Sq.M	PC & laptop with internet, telephone, wall mounted file cabinets, soft notice board, chairs and tables cabinets mounted below the tables & fans along with air conditioner
Faculty Rooms	2	Exclusive	40	178.02 Sq.M	PC & laptop with internet, telephone, wall mounted file cabinets, soft notice board, chairs and tables cabinets mounted below the tables & fans along with air conditioner
Girls' common room	1	Shared	25	155.25 Sq.M	Table Tennis Board, Carom Board
Boys' common room	1	Shared	20	104.26 Sq.M	Table Tennis Board, Carom Board, Gymnasium equipment & accessories
Others (Cafeteria, Board Room, Stationary store, Sick room & house keeping))	6	Shared	30	288.31 Sq.M	Chair, table, racks, kitchen utensils and sick beds

• Laboratories & Stores

Room Description	No. Of Rooms	Shared/ Exclusive	Capacity	Dimensions with area	Rooms/Labs Equipped with
Pharmaceutics	4	Exclusive	25	327.01 Sq.M	Layout design is as per industries setup including cubicular section with anti room, aseptic room. Equipped with required equipments, instruments and glass wares to conduct experiments related to programme curriculum and provided with working table, water and gas connection where ever need.

Microbiology/Biotechnology	1	Shared	25	77.81 Sq.M	Equipped with required equipments, instruments and glass wares to conduct experiments related to programme curriculum and provided with working table, water and gas connection where ever need along with sterile room and laminar airflow hood.
Pharmaceutical Chemistry	3	Exclusive	25	234.01 Sq.M	Equipped with required equipments, instruments and glass wares to conduct experiments related to programme curriculum and provided with working table, water and gas connection where ever need
Anatomy and Physiology	1	Shared	25	82.26 Sq.M	Equipped with required equipments, instruments and glass wares to conduct experiments related to programme curriculum and provided with working table, water and gas connection where ever need. human skeleton, Charts & models.
Pharmacology	1	Shared	25	82.26 Sq.M	Equipped with required equipments, instruments and glass wares to conduct experiments related to programme curriculum and provided with working table, water and gas connection where ever need. human skeleton, Charts & models.

Pharmacognosy	1	Exclusive	25	82.28 Sq.M	Equipped with required equipments, instruments and glasswares to conduct experiments related to programme curriculum and provided with working table, water and gas cannection where ever need.
Machine room	1	Exclusive	25	80.69 Sq.M	Equipped with required equipments, instruments to conduct experiments related to programme curriculum and provided with working table and water where ever need.
Instrument room	1	Exclusive	25	75.47 Sq.M	Equipped with required equipments, instruments to conduct experiments related to programme curriculum and provided with working table and water where ever need.
Computer Lab	1	Shared	75	374.28 Sq.M	Equipped with 268 (PC and laptops) for use of students and faculty members in an air conditioned hall along with internet connection with UPS.
Museum	1	Exclusive	25	49.88 Sq.M	Equipped with models, charts packaging materials, herberium sheet and specimens of human organs.
Stores	1	Exclusive	08	38.73 Sq.M	Chemicals, glass wearsd and other consumables
Animal House	1	Shared	03	86.34 Sq.M	Storage of rats, mice in an air conditioned room
Animal Room	1	Shared	03	86.34 Sq.M	Storage of rats, mice in an air conditioned room

Others (Language Lab & Library and reading room)	3	Shared	75	511.52 Sq.M	Sufficient no of books and journals relevant to the curriculum with libary management software multimedia PC and well Equipped language lab.

6.1 Class/Tutorial rooms for the programme (20) **Total Marks 20.00**

6.1.1 Adequacy of rooms for lectures (core/electives), seminars, tutorials, etc. for the programme (10) Institute Marks 10.00

- Department has sufficient number of smart class rooms for conducting lectures and tutorials for all semester students.
- In the Pharmacy program each year of B. Pharm has two divisions with fully furnished exclusive smart class rooms with teaching
- Department has a shared seminar hall to conduct workshops, seminars and guest lectures.
- Department has two Tutorial Rooms to help weaker students who are lagging in the subjects.
- Class rooms are provided with good ventilation, high speed LAN Connection and uninterrupted power supply (UPS) with adequate lighting and ceiling fans.
- Counseling (done in faculty rooms) is provided for grievance addressal and to guide students for doubt clearance.

6.1.2 Teaching aids – white/interactive boards, OPH multimedia projectors, etc. (5) Institute Marks 5.00

- Total number of LCD projector: 9
- Total number of green boards: 4
- Total number of white boards: 18
- Total number of data & voice points: 6
- Total number of laptops: 20
- Total number of desktops: 06

6.1.3 Quality of acoustics, class room size, conditions of chairs/benches, air circulation/ventilation, lighting/illumination, exit points, ambience, etc. (5) Institute Marks 5.00

- Quality of classrooms, condition of furniture, air circulation/ ventilation, lighting, acoustics in the room are in excellent condition.
- Each class room can accommodate minimum 60 students (maximum 75) and is equipped with comfortable chairs fitted with desks/tables, adequate number of tube lights, ceiling fan, green boards/white boards.
- Most classrooms are fixed with LCD projectors for conducting presentation sessions and three LCD projectors are kept movable.
- LAN & Internet connection is provided in almost all the class rooms to enable presentation of online information.
- Every class room has two doors - one for entrance and another for exit and four windows.
- Above amenities ensure proper ambience for the teaching and learning process of the department.

6.2 Faculty rooms (20) **Total Marks 18.00**

6.2.1 Availability of faculty rooms (10) Institute Marks 9.00

Faculty cabins and Professors room are well equipped with

- PC/DESKTOP with LAN & UPS
- Internet connection
- Soft bulletin board
- chair
- table
- Wodden almirah/lockers
- Wall mounted wooden racks
- Air conditioner with adequate lighting

6.2.2 Rooms equipped with white/black board, computer, internet, furniture, almirah etc (10) Institute Marks 9.00

- Faculty rooms and tutorial/seminar rooms are used for counseling/discussion with the students which are adequate for Pharmacy programme.

6.3 Laboratories, instrument/machine room and computer room along with equipments and relevant facilities (50) **Total Marks 45.00**

(Give a separate table for Instrument room and Machine room listing all the instruments/ equipments present with their make and model, existence of SOPs and Log Books for individual equipments)

Lab description	Space/Student Ratio(Batch size)	Availability of Manuals	Quality of instruments	Remarks
Pharm. Chemistry 1 (Pharm Analysis) Lab	25	Available	Good	Working
Pharm Chemistry 2 (Organic Chemistry) Lab	25	Available	Good	Working
Pharm. Chemistry 3 (Medicinal Chemistry) Lab	25	Available	Good	Working
Pharm. Technology 1 (Physical Pharmacy) Lab	25	Available	Good	Working
Pharm. Technology 2 Lab	25	Available	Good	Working
Pharm. Technology 3 Lab	25	Available	Good	Working
BioPharmaceutics Lab	25	Available	Good	Working
Pharm. Microbiology cum Biotechnology Lab	25	Available	Good	Working
Pharmacognosy Lab	25	Available	Good	Working
Anatomy and Physiology cum Pharmacology Lab	25	Available	Good	Working
Instrument Room	12	Available	Good	Working
Machine Room cum Drwaing Lab	25	Available	Good	Working

6.3.1 Adequacy of labs to run all programme-specific practicals (15) Institute Marks 13.00

Department has enough labs which are used for students of all the years on academic timetable basis to meet the curriculum requirements.

- The courses which have practical laboratory work provided labs every week.
- Labs are equipped with adequate glassware, equipments & necessary machineries relevant to the course specific program curriculum.
- students of each semester are divided in three groups to carry out course specific experiments
- Laboratories are provided with facilities to carry out their mini and major project work.
- Laboratories during two sessions of saturday are absolutely kept free for students to develop additional core skills.

6.3.2 Availability of computing facilities exclusively for the programme (15) Institute Marks 12.00

Central computer lab is equipped with 272 nos of PC/Desktops & 25 nos. printers connected through a central server with LAN, UPS.which is used on shared basis.

- All computers are loaded with 13 nos. licensed application software 3 nos. system software to facilitate all students to carry their course work.
- Central computing lab is also equipped with 2 Mbps Internet connections, where students can access the Internet and download Lecture videos, subject materials etc.
- Apart from this. there are 25 Laptop/desktop computers provided to the faculty members to carry out similar activities for preparation of lesson plan.
- Additionally there is one printer and telephone cum fax in Principal's chamber in the department.
- Internet facility has been provided with restricted accessibility by the department to the students and faculty 24/7.

6.3.3 Availability of the labs with technical support beyond working hours (10) Institute Marks 10.00

- The Practical laboratory classes are held within the college hours (10 am to 5-20 pm) in the presence of technical assistant and subject teacher.
- Beyond the college hours, the laboratory remains open till 6 P.M for the students to carry out their jobs with adequate technical support.
- Lab slots are provided for each of three groups of each division of each semester students depending on the credit hours prescribed in the curriculum.
- Extra lab vacant slots are provided on Saturday depending on the progress in the course practical work if necessary.

6.3.4 Name and number of equipment and their maintenance, number of students per experimental set up, size of the laboratories, overall ambience etc. (10) Institute Marks 10.00

Lab Description	Size (Sq M)	No. of Students per Batch	Ambience	Instrument/Equipment	Make/Model no.	SOP/Log Book
				FTIR Spectrophotometer	Bruker Alpha-T, Gmbh	Available

INSTRUMENT ROOM	75.47	12	AirConditioned with adequate lighting	H P L C with Accessories	Waters, USA; Isocratic System, UV detector	Available
				Spectrophotometer UV-VIS	Shimadzu 1800, Japan,2ble beam	Available
				Spectrophotometer UV-VIS	Systronics,single beam	Available
				Digital Balance	Mettler 0.1mg/XB120A	Available
				pH Meter	Metttler; FE 20-1-KI	Available
				Karl Fischer Instrument	Veego	Available
				Flourimeter	Systronics	Available
				Conductivity meter	Systronics/304	Available
MACHINE ROOM CUM DRAWING HALL	80.69	25	Well ventilated with adequate lighting	Engineering Drawing boards with stands	RUTH& CO	--
				Reynold's apparatus	B.S TRADERS	--
				Single nozzle pneumatic liquid filling machine		--
				Two-stroke ampoule filling and sealing machine		--
				Autoclave		--
				BOD incubator		--
PHARMACEUTICAL CHEMISTRY LAB 1 (Organic Chemistry)	75.16	25	Well ventilated with exhaust system, adequate lighting, and water & gas connection	Hot air oven	Labequipment	--
				Melting point apparatus	Test Master	--
				Magnetic stirrer	Remi	--
				Heating mantle	Test master	--
				Digital balance	Citizen	--
				Water bath	Test master	--
				pH meter	Elico	--
PHARMACEUTICAL CHEMISTRY LAB 2 (Pharm. Analysis)	75.6	25	Well ventilated with exhaust system, adequate lighting, and water & gas connection	Digital balance	Shimadzu/BL220H	
				Flamephotometer	Systronics	
				Hot air oven	Test master	--
				Hot plate	Test master	--
				Analytical balance	Citizin/CTG302	--
				pH meter	Elico	--
				Magnetic stirrer	Remi	--
				Water bath	Test master	--
PHARMACEUTICAL CHEMISTRY LAB 3(Med. Chem.)	83.25	25	Well ventilated with exhaust system, adequate lighting, and water & gas connection	Refrigerator	Samsung ,350lit,2T314	--
				Vacuum pump	Precivac/DC31	--
				Magnetic stirrer	Remi, 1lit	--
				Water bath, Thermostatic	Digitach	--
				Centrifuge	Remi RM 12C	--
				Hot plate	Tarsons	--
				Digital balance	Citizen,CTG302	--
				Fume hood	Reico	--
				Mechanical stirrer	Remi, RQ121D	--
				pH meter	Elico	--
				water bath	Test master	--
				Muffle furnace	Test master,1200 deg. C	--
				Vortex Mixer	Tarsons	--
				Hot air oven	Lab equipment	--
				Heating mantle	Test Master	--
				Melting point apparatus	Test master	--
				Micro oven	Sharp, 20Lit	--
PHARMACEUTICAL TECHNOLOGY LAB – 1(Physical Pharmacy)	82.26	25	Well ventilated with adequate lighting	Water bath	Test master	--
				Magnetic stirrer	Remi, 1 lit	--
				Refractometer	Advance, R-4	--
				Digital Balance	Citizen, CTG-302	--
				pH meter	Elico/li615	--
				Polarimeter	Lab equipment	--
				Hot plate	Tarsons	--
				Membrane filtration set	Tarsons	--
				Vernier depth gauge	Mututio/japan	--
				Viscometer	Brookfield	Available
				Mechanical stirrer	Rimi/rq121/d	--
				Magnetic stirrer	Remi	--
				Capsule counter		--
				Slide calipers	Mitutoyo	--
				Bulk density apparatus		--
				Emulsifier		--
				Bottle cap sealing machine		--
				Ointment filling machine		--
				Ball mill		--
				Vacuum pump	Tarsons/Roker-400	--

PHARMACEUTICAL TECHNOLOGY LAB – 2 & 3	75.15 + 83.25	25	Well ventilated with adequate lighting, and water & gas connection. Two cubicles (Tablet room & Aseptic room) have air conditioner	Ointment tube crimping machine		--
				Clarity test apparatus		--
				pH meter	Elico	--
				Digital Balance	Citizen	--
				Moisture balance		--
				Disintegration test apparatus	Labeqiipments	--
				Heating mantle		--
				Laminar Air Flow Bench	Reico equipment	--
				Hot plate		--
				Suppository mould	Test Master	--
				Lipstick mould	Test Master	--
				Tray dryer		--
				Humidity cabinet	Yoma	--
				Tablet machine (10 Stn. Roatary - Karnavati)	Karanabati	Available
				Monsanto hardness tester		--
				Pfizer hardness tester		--
				Kalweka horizontal drive	Karanabati	--
				Kalweka Coating pan, Polishing Drum, Granulator, Kneader	Karanabati	--
				Conical Percolator	Cheminco	--
				Autoclave		--
				Digital Balance (3 Kg)	Citizen/	--
				Water bath	Labeqiipments	--
				Sieve shaker with 2 sets of standard sieves		--
				Dissolution rate test apparatus (3-basket)	Veego/VDA3	--
				Microscope with stage and eyepiece micrometers	Olympus	--
				Permeability Cup		--
PHARMACEUTICAL TECHNOLOGY LAB (BIOPHARMACEUTICS)	86.34	25	Well ventilated with exhaust system & adequate lighting with water connection.	Membrane filtration unit	Tarsons	--
				Double Distillation Apparatus	Borosil	--
				Dissolution rate test apparatus-Labindia (8-basket)	Lab India	Available
				Water bath	Digitach	--
				Hot plate		--
				Heating mantle	Teat Master	--
				Micropipette	Tarsons/T-10,T-100,T-1000	--
				Centrifuge	Sinha scintfic	--
				pH meter	Elico/li615	--
				Digital Balance	Citizen, CTG 308	--
				Magnetic stirrer	Remi	--
				Mechanical stirrer	Remi	--
PHARMACEUTICAL MICROBIOLOGY CUM BIOTECHNOLOGY LAB	77.81	25	Well ventilated with adequate lighting, and water & gas connection. Air-conditioner in Aseptic room.	Water bath	Test master	--
				Microscope	Olympus	--
				Centrifuge	Tersons	--
				Colony counter	Labequipment	--
				Hot air oven	Labequipment	--
				Autoclave	sinha scintific	--
				Incubator	sinha scintific	--
				Digital balance	Citizen	--
				Hot plate	Test master	--
				Refrigerator	Samsang	--
				Gel electrophoresis unit		--
				Shaker water bath		--
				Binocular Microscope	Magnus/MLXB	--
				Zone reader	Rolex	--
				BOD shaker incubator	sinha scintific	--
				Micropipette set	Tarsons/030050	--
				Laminar Air flow bench		--
				pH meter	Elico/613	--
PHARMACOGNOSY LAB.	82.28	25	Well ventilated with adequate lighting, and water & gas	Incubator	Testing instrument	--
				Autoclave		--
				Laboratory mixer grinder		--
				Heating mantle	Test Master	--
				pH Meter	Elico	--
				Camera Lucida	lab equipment	--
				Stage Micrometer	Erma	--
				Vacuum Pump		--
				Water BathThermostate		--
				Hand Grinder		--
				TLC Kit with spreader		--

			connection.	Binocular microscope	Olympus Magnus/MLXB	--
				UV Chamber - wooden	Testing instrument	--
				Hot air oven		--
				Hot Plate		--
				Microscope	Olympus	--
				Magnetic stirrer		--
				Eye Piece Micrometer		--
				Percolator		--
PHARMACOLOGY CUM PHYSIOLOGY LAB.	82.26	25	Well ventilated with adequate lighting and water connection.	Data Acquisition System	Inco	Available
				Plus Maze	Inco	Available
				Microscope (Trinocular; Projection)	Scintific ins prt ltd	--
				Spirometer	Test master	--
				Heating Mantle		--
				Haemocytometer		--
				Stop Watch		--
				Disecting Box		--
				Rabbit Holder		--
				Muscle Elctrode		--
				Microscope	Olymus	--
				Eddy's Hot Plate		Available
				Actophotometer	Rolex	Available
				Rota Road	Rolex	Available
				Organ Bath (Single unit)		--
				Organ Bath (Double Unit)		--
				Kymograph (Rotating Drum)		--
				Digital Balance	Citizen/Ctg302	--
				Pole Climbing Apparatus		Available
				Lucas Moisture chamber		--
				Disection tray		--
				Plethysmograph	Inco	Available
				Accucheak	Roche	--
				pH Meter		--
				Nebulizer		--

6.4 Animal House & related facilities (20) **Total Marks 19.00**

6.4.1 Dimensions of Animal house (4) Institute Marks 4.00

The area of animal house is 86.34 Sq.M

6.4.2 Sterilisation facility for feed, cages etc. (2) Institute Marks 2.00

Cages after washing are disinfected with dettol water/salvon water.

6.4.3 Washing facilities and sanitation conditions (2) Institute Marks 2.00

Regular mopping with disinfectant solution and removal of excreta are done by contractual sweeper with week end cleaning with detergent and disinfectant solution. Two wash rooms with three taps with continuous water supply is available

6.4.4 Disposal of animals after experimentation as per norms (4) Institute Marks 3.00

Animals after experiments were disposed through a pest control organization. A contract has been reached with them.

6.4.5 Air conditioning /handling/circulation/facilities (4) Institute Marks 4.00

Two split air conditioners and adequaite light and selling fans arrangement have been made to provide cool and aembiant environmant with proper arrangement of racks and cages for ease in air circulation and handling.

6.4.6 Registration of Institutional Animal Ethics Committee (4) Institute Marks 4.00

- Institutional animal ethics committee is registered with CPCSEA--1458/PO/a/11/**CPCSEA (upto 11th May 2014**)

6.5 Museum (10) — Total Marks 10.00

6.5.1 Size of the museum (4) — Institute Marks 4.00

Area is 49.8 Sq. M

6.5.2 Type & quality of collection in the museum (6) — Institute Marks 6.00

Quality of the following exhibits/ collection are in excellent condition and are well maintained

- Herbarium sheets.
- Anatomical models.
- Preserved biological organs.
- Packaging materials for pharmaceutical dosage forms.
- Charts showing anatomical structure of human body.

6.6 Medicinal Plant Garden (10) — Total Marks 8.00

6.6.1 Size/area of the garden (3) — Institute Marks 3.00

20 Sq. M.

6.6.2 Types, varieties and number of plants available in the garden (5) — Institute Marks 3.00

- Types of plant available is 18.
- Total number of plants is 22.

Few important plants are listed below:

Common Name	Scientific Name
Vasak	*Adhatoda vasica*
Cinnamon	*Cinnamomum zeylalicum*
Clove	*Eugenia caryophyllus*
Ghritakunari	*Aloe barbadensis*
Aswagandha	*Withania somnifera*
Tulshi	*Ocimum sanctum*
Beal	*Aele marmelos*
Arjuna	*Terminalia arjuna*

6.6.3 Overall look and maintenance of the medicinal plant garden (2) — Institute Marks 2.00

• What is the total area of the garden (in square feet)	224
• Is the boundary of the garden properly demarcated	Yes
• Does the overall look of the garden give an impression of a temporary or a permanent arrangement	Yes
• Are the plants planted by adopting some system like herbs, shrubs, trees, xerophytes, plants growing under shade, perennial plants etc. in demarcated areas	Yes
• Is the number of plants sufficient as per the allotted area	Yes
• Is the plant density proper	Yes

Overall look of the medicinal plant garden is green and ambient. The parts of the plant provide source of different herbal medicinal formulation which are utilized as basis ingredient for different laboratory experiments and project in pharmacognosy, formulation development and other purpose.

6.7 Administrative & Technical Manpower support and their skill upgradation (20) — Total Marks 20.00

Administrative Staff:

Designation	Pay Scale	Name of the staff	Date of joining	Qualification
Sr. Gen Manager, B & C	PB :37400-67000, GP:10000	Jayanta Bagchi	02/01/2007	B Com
Asst. Gen Manager (Finance)	PB : 26000-45000, GP : 8400	Chanchal Pal	01/12/2005	B.Com,MBA , ICWA
Manager (Finance)	PB : 15600-39100, GP : 7000	Ramkrishna Roy	02/05/2008	B Com
Sr. Assistant (Finance)	PB : 7100 - 37600,GP : 3200	Souravendra Ukil	21/07/2008	B Com, MBA
Dy Gen Manager (CRTT)	PB : 26000-45000,GP : 8400	Subhabrata Majumder	08/02/2010	B Sc, PG Dip in Mktg & sales
Manager (Exam & Univ Affair)	PB : 15600-39100, GP : 7000	Arup Kr Chatterjee	02/05/2008	Dip in B Admn
Manager (ITES)	PB : 15600-39100, GP : 7000	Kaushik Rana	08/08/2006	PGCACS
Sr. Aissistant - ITES	PB : 4900 - 16200 ,GP : 1900	Shubhojit Ghosh	01/04/2009	B.Com
Librarian	PB : 15600-39100,GP : 6000	Supriya Banerjee	07/02/2007	B Sc,M Lib & Inf Sc, PGDLAN
Tech Asst - Library	PB : 7100 - 37600, GP : 3200	Ajoy Kr Sahu	06/07/2010	BA, M Lib & Inf Sc
Tech Asst - Library	PB : 7100 - 37600, GP : 3200	Ghazala Firdous	06/07/2010	BA, M Lib & Inf Sc
Dy.Manager (Admn. & HR)	PB : 15600-39100,GP : 6000	Srinivas Rao	14/06/2006	B Com, DCA
Jr, Manager (Admn)	PB : 7100 - 37600,GP : 4400	Kunal Bhattacharya	06/06/2004	B Com , LLB
Jr.Manager (Exam & Univ Affairs)	PB : 7100 - 37600, GP : 4400	Srikant Tewari	18/06/2008	B Sc., DCA,MBA

Technical Staff:

Designation	Pay Scale	Name of the Tech. Staff	Assigned Lab	Date of joining	Qualification		Other Technical Skills Gained	Duties & Responsi- bilities
					At Joining	Now		
Sr. Tech. Assistant	PB : 7100-37600,GP : 4400/3200	Subhankar Das	Org. Chemistry / Med Chemistry	16/07/2008	B Sc, D Pharm	NA	NA	Arrangements & guiding Lab Expt.
Sr. Tech. Assistant	PB : 7100-37600,GP : 4400/3200	Pravanjan Bhakta	Pharm. Tech, Instrument Lab.	01/09/2009	D.Pharm, B Pharm	NA	NA	Arrangements & guiding Lab Expt. & responsibility of Store
Tech. Assistant	PB : 7100-37600, GP : 3200	Chinmoy Adhikari	Microbiology, Pharmacognosy	17/05/2010	D. Pharm	NA	NA	Arrangements & guiding Lab Expt. & responsibility of Store
Tech. Assistant	PB : 7100-37600, GP : 3200	Lalmohan Masanta	Phisiology, Pharmacology	09/08/2010	D. Pharm	NA	NA	Arrangements & guiding Lab Expt. & responsibility of Store
Tech. Assistant	PB : 7100-37600,GP : 3200	Baishnab Das Pathak	Bio Pharmaceutics, Pharm, Analysis	02/07/2012	D. Pharm	NA	NA	Arrangements & guiding Lab Expt.
Tech. Assistant	Consolidated Rs 15000	Prasanta Sarkhel	Inorganic Chemistry, Biology	13/10/2014	D. Pharm, B. Pharm	NA	NA	Arrangements & guiding Lab Expt.
Tech. Assistant	Consolidated Rs 15000	Prasun Kanti Adhikari	Pharm. Analysis, Pharm. Eng	15/10/2014	B. Pharm	NA	NA	Arrangements & guiding Lab Expt.
Tech. Assistant	Consolidated Rs 15000	Mrinal Dutta	Dispensing Pharm. Physical Pharmacy	17/07/2015	B.Sc, D.Pharm	NA	NA	Arrangements & guiding Lab Expt.

6.7.1 Availability of adequate and qualified administrative staff for running the office (4) Institute Marks 4.00

- Sufficient no of qualified administrative staffs are available to run the various administrative activities.

6.7.2 Availability of adequate and qualified technical supporting staff for programme specific labs (4) Institute Marks 4.00

- Adequate qualified technical staff members are available to conduct practical classes in different laboratories.
- Each Subject specific Lab. has qualified supporting staff to guide the students.

6.7.3 Incentives & skill up-gradation (4) Institute Marks 4.00

- Faculty members/ Technical staff members are encouraged to upgrade their qualification/skill, and support is being provided in that respect.
- Faculty members/ Technical Staff members are encouraged to attend the seminars/ workshops arranged by different Instruments Manufacturers to upgrade their knowledge and skill in instrument handling.

Date of training	Details of training & skill upgradetion	Name of the Teacher / Lab Technician	Organization conducted the training programme
26-05-2010	Service seminer on HPLC & other instruments of Waters India	Mr. Sibram Paria Mr. Souvik Bhattacharayya Mr. Subhankar Dash	Waters, India

06-02-2012	Material characterisation by thermal analysis techniques	Prof. Debasis Dutta Prof. Goutam Pramanik	NETZSCH Technologies India Pvt.
12-06-2012	Servicing of HPLC	Prof. Goutam Pramanik Mr. Angshuman Lahiri Mr. Subhankar Dash	Waters, India
28-06-2012	Bruker SCION seminer - FTIR & TQ-MS	Prof. Debasis Dutta Prof. Tapas Kumar Pal	Lab India Analytical Instruments Pvt.
23-09-2013	Seminar on Thermo Scientific GC (TRACE 1110)	Mr. Angshuman Lahiri Mr. Baisnabdas Pathak	Thermo Fisher Scientific India Pvt. Ltd.

6.7.4 Organisation of training programmes for skill upgradation, safety programmes/drills, etc. for lab staff within the institution (4) Institute Marks 4.00

- Fire drill / safety drill programme is being arranged from time to time.
- Laboratory Technicians/ Faculty members are properly trained by the equipment/ instruments manufacturer during installation and subsequent service visits for UV Spectrophotometer, FTIR, HPLC and other automated precision instruments.
- In addition, Faculty members having industral/ research exposure provide hands-on training to Lab technicians for operating Manufacturing equipments like Rotary Tablet Compression machine, Kalweka multipurpose equipments, Autoclaves, Tablet Coating process etc. as well as *in-vitro* and *in-vivo* pharmacological testing.

6.7.5 Stores and its management (4) Institute Marks 4.00

Management of store for Lab reagents/Chemicals and other lab consumables:

- Based on requirement & physical stock requisition are being raised
- Purchase are being made from selected vendors based on rates and credibility
- After supply, the items are received in store and entered in store stock register. These are physically kept in store.
- The items are being issued from store to individual lab on the basis of requisition from lab.
- The items are shifted to lab and entered in lab stock.
- When items are consumed, repeat requisition are made to store.
- One of the technical asst. is looking after storing activity of reagents and chemicals and another Technical Assistant looking after glassware and consumables. One Sr. Technical Assistant provide assistance in purchasing activity along with faculty members.

7 Teaching-Learning Process (75) **Total Marks 61.00**

7.1 Tutorial classes to address student questions: size of tutorial classes, hours per subject given in the timetable (10) **Total Marks 8.00**

Institute Marks 8.00

(Instruction: Here the institution may report the details of the tutorial classes that are being conducted on various subjects and also state the impact of such tutorial classes).

• Provision of tutorial classes in timetable(Yes/No)	Yes
• Tutorial sheets provided(Yes/No)	No
• Tutorial classes taken by:	Faculty
• Number of tutorial classes per subject per week:	21
• Number of students per tutorial class:	15-20
• Number of subjects with tutorials: 1st year..... 2nd year..... 3rd year.....	CODE THEORY Ttutorial classes/week Semester-I

Tutorial classes are conducted in order to provide doubt clearance to the student's and also to monitor improvement in learning ability of weaker students. These subjects with one tutorial class per week are assigned one credit as specified in the course curriculum.

Tutorial classes are divided into 15 – 20 sized batches handled by a single faculty member in separate tutorial rooms.

Impact:

- Integration of knowledge during discursion, clarification of doubts
- Solutions of mathematical problem
- Development of communicating skills
- Problem solving ability

7.2 Mentoring system to help at individual levels (10) **Total Marks 8.00**

Institute Marks 8.00

(Instruction: Here the institution may report the details of the mentoring system that has been developed for the students for various purposes and also state the efficacy of such a system.)

• Mentoring System	Yes

• Type of Mentoring	Professional Guidance
• Number of faculty mentors	7
• Number of students per mentor	60
• Frequency of meeting	Once in the begining of semester and need based

Type of Mentoring	Process	Method	Periodicity Weekly/monthly/etc.
Professional Guidance	Counseling	1. Monitoring Regularity of the students.	monthly
		2. Monitoring Performance of the students.	
		3. Personal Counselling for Career Guidance	
		4. 60 Students in a section are assigned to one faculty	
		5. The parents of poorly performing students are informed through SMS and counselling is given.	
		6. Students are encouraged to present papers at various conferences	
Career counseling	Training & Placement	Lectures and skill development tests	monthly in end semester
Course work Specific	Covering Content beyond syllabus	1. Lectures Interspersed with interactive discussions	semester wise
		2. voccational training	
		3. motivating students for seminars, debates, conference participation	
Lab Specific	Practical laboratory experiments	Designing additional Experiments / Programs beyond Lab Syllabus of experiments list	semester wise

Efficacy of the System:

- The mentoring system developed by the college has been proved to be effective considering different parameters.
- The involvement of students in the academics has been increased, like class work attendance, paper presentations, presentation of posters in exhibitions, participation in seminars, cultural activities etc.
- Because the number of students allocated to each of the mentor is limited, personal interaction on regular basis has been taken up.
- Teachers are also becoming more responsive to the learner needs day by day which is being reflected in the proctor diary maintained by the teacher.

7.3 Feedback analysis and reward / corrective measures taken, if any (10) — Total Marks 9.00

Institute Marks 9.00

(Instruction: The institution needs to design an effective feedback questionnaire. It needs to justify that the feedback mechanism it has developed really helps in evaluating teaching and finally contributes to the quality of teaching.)

• Feedback collected for all courses(Yes/No)	Yes
• Specify the feedback collection process	Feedback is collected for all courses in the prescribed format. Set of feedback forms is handed over to the students having requisite attendance by Principal / Head of the Department and confidential feedback surveys are taken thereafter. Specify the feedback collection process: At the end of semester, the Principal collects the feedback from the students and submit it to the Director of the institute who in turn compiles subject wise feedback & informs observations to the concerned faculty members. If needed faculty members makes rectification /changes accordingly.
• Percentage of students participating	Almost the entire class
• Specify the feedback analysis process	Specify the feedback analysis process: Principal evaluates the feedback form and as and when required, concerned teacher is counseled. Rating of each teacher in each subject is summed up and average is calculated and accordingly appreciation letters are handed over to the concerned faculty members.
• Basis of reward / corrective measures, if any	Basis of reward/ corrective measures, if any: Teachers having a poor feedback are counseled by the Principal
• Number of corrective actions taken in the last three years	Conveyed to the teachers on case to case basis annually.

7.4 Scope for self-learning (5) — Total Marks 5.00

Institute Marks 5.00

(Instruction: The institution needs to specify the scope for self-learning / learning beyond syllabus and creation of facilities for self-learning / learning beyond syllabus.)

As part of curriculum, there are the following sessional courses:

1. Vocational Training Evaluation
2. Seminar on Assigned /Selected Topic

In both of the above courses, the students are free and encouraged to choose any relevant industry for training and any relevant topic which they can study and deliver a seminar.

Students are also given assignments, regular power point presentations, to promote self learning. Learning Resource Centre, University LAN and internet resources help in

self learning.

The B.Pharm curriculum allows wet lab projects given to the individual/group of students in final year also to provide a good tool of self learning where students gain practical knowledge to achieve objectives of the project. Many e-learning materials, journal and magazine are subscribed and made available to the student at the Institute Library to help the students inculcating the habit of self-learning. These also include guides on competitive examinations.

7.5 Generation of self-learning facilities, and availability of materials for learning beyond syllabus (10) Total Marks 8.00

Institute Marks 8.00

(Instruction: The institution needs to specify the facilities for self-learning / learning beyond syllabus.)

Self-learning is promoted in the Institute by generating self-learning facilities under various modes. Students are encouraged for self-learning by personal counseling and organizing various seminars and events. Following are the various modes of self-learning and facilities created therein.

Web-based Learning:

The internet is an open information system from where the students can obtain various kinds of information, media and materials such as texts, images, video sequences which can help them in a diverse way for generating self- learning environments. Hence, the potential of the Internet self-learning mode is considered to be very high. The Institute provides internet facility in the campus for 24 hours to promote and motivate students to self-learning.

Learning with Multi-media:

Availability of course material on intra-net (Library server)

Digital Library facility

LCD projectors for presentation

Learning Resource Centre:

Learning Resource Centre, the Institute Library is open from 9-30 am till 6-00 pm on all working days and has online search and reprographic facilties.

Classroom Presentations:

Every course allows students to prepare and present any topic from the curriculum as well as to arrange presentation on non-technical topics also.

Technical Symposiums:

Organizing annual events like, Conferences (NATCONPH) and various Seminars & Interactive cultural Events.

Organizing various Technical events like Scientific poster presentation, debate, awareness programme (National Pharmacy Week), etc.

Motivating students to participate in inter-college conferences for paper presentation and project exhibitions.

Provision for teaching of French and German.

Provision for Language laboratory in English language for improving English speaking and writing.

7.6 Language Laboratory (10) Total Marks 8.00

Institute Marks 8.00

(Instruction: The institution may provide the details of the language laboratory. The descriptors as listed here are not exhaustive.)

Language Laboratory	Space, number of students	Software Used	Type of experiments	Quality of instruments	Guidance
Yes	40	ISLS(developed by IIT Kharagpur)	Listening/Speaking	GOOD	Faculty-assisted classes

7.7 Career Guidance, Training, Placement, and Entrepreneurship Cell (10) Total Marks 8.00

Institute Marks 8.00

(Instruction: The institution may specify the facility and management to facilitate career guidance including counselling for higher studies, industry interaction for training/internship/placement, entrepreneurship cell and incubation facility and impact of such systems.)

Institute has a dedicated Training and Placement (T&P) Cell under the supervision of a dedicated faculty. The affairs of the T&P Cell are managed by a Placement Team drawn from few faculty members under the overall supervision of the faculty in charge. The cell maintains liaison with employers and arranges campus interview for placement of undergraduates and graduates and arrange logistics for employers visiting the campus.

The Training and Placement (T&P) Cell maintains liaison with industries and arranges for lecture/demonstration by industry people for the benefit of students and faculty.

The Institute has created the following facilities for career guidance:

Full time Placement Officer (one faculty member)

On campus training for placements.

Companies are invited for campus placements.

Guidance for preparing for GRE, GATE & GPAT.

Faculty members also guide and counsel the final year students by holding the meeting on regular intervals related to the electives, preparation of competitive exams, and admission in higher education.

7.8 Co-curricular and Extra-curricular Activities (5) — Total Marks 4.00

Institute Marks 4.00

(Instruction: The institution may specify the Co-curricular and extra-curricular activities, e.g., NCC/NSS, cultural activities, etc)

Students(Aveek Das and Debojyoti Bhatta —1st yr ; Debajyoti Bhatta and Twishyo—2nd yr; Sandhila Ghosh—4th yr, Ruchita Datta—4th yr, Pamelika Das—2nd yr and 8students from 1st and 2nd yr) participated in Pele Quiz (Debate and Quiz)and Inter-College Fest (Solo/Group dance; Creative writing)held at NSHM Kolkata Campus and won awards or got good ranks

Students have been regularly sent to Industries/Marketing fields/Hospitals or motivated to find out short-duration research projects on their own (e.g. Sompriya Chatterjee/Ashis Kr Saha). Docs(training certificates) and letters available.

7.9 Sports grounds, facilities, and qualified sports instructors (5) — Total Marks 3.00

Institute Marks 3.00

(Instruction: The institution may specify the facilities available and their usage in brief.)

- The institute has one small outdoor play ground for badminton games, which serves also the mini play ground for seven players' football game, T20 cricket game also.
- The institute also provision for indoor games like carom and table tennis
- As per AICTE norms the institute provides mini gymnasium centre for practising multiple exercising skill
- Eventually the institute facilitates first hand training in dance, drama and yoga for students and faculty members
- The institute has arranged a local outdoor play ground on contract to a local club for organizing annual spots events where pharmacy students excel in major contests
- Few faculty members co-ordinates sports events as sports instructor & coordinator

8 Governance, Institutional Support and Financial Resources (75) — Total Marks 66.50

8.1 Campus Infrastructure and Facility (10) — Total Marks 9.00

8.1.1 Maintenance of academic infrastructure and facilities (4) — Institute Marks 3.00

(Instruction: Specify distinct features)

Physical resources available: Exclusive for this college:

- Land 2.175 acres
- Built-up floor space: 11487 sq m.

Class Rooms: Ten Nos. well furnished smart class rooms are equipped with LAN, PROJECTOR with screen, green/white board and adequate lighting and ventilation with necessary accoustics. Regular maintenance is done by administration department and every day end cleaning is done by contractual sweepers.

Seminar Halls: Seminar hall of the department is maintained by departmental faculty & administration assistants at regular intervals and are equipped with LAN, PROJECTOR with screen, green/white board, provision for sound system with adequate lighting,ventilation and Seating capacity of 200 persons.

Tutorial Rooms: Six nos.Tutorial rooms are cleaned every day and maintained by administration assistants

Laboratories: A faculty in charge and a technical assistant looks after the maintenance of each laboratory. They put together propose the budget for the required consumables, new equipment, repairs and calibration if required. The technical assistant maintains the log book for equipment of the laboratory. They prepare the preventive maintenance schedule under the guidance of faculty-in-charge and carry out regular maintenance as per the schedules. Technical assistants with adequate computer literacy are in-charge of Central computer laboratory are responsible for maintenance of systems and software.

Main Library: All the books are accessed according to the serial number of accession register and classified subject wise and shelved in the rack according to call numbers regularly. Students and Faculty members of department can borrow books from the Library, and students in their free time can make use of the books in the reading room available in the Library.

Internet /Intranet: Internet related matters are maintained by a Systems Administrator. He maintains the daily band width, usage, band width allocation, sharing etc. along with trouble shooting of hardware & software

Electricity: Maintenance in charge, two technicians and one attendee look after the maintenance of electricity and Power back up supply (125 KVA generator).

Other facilities:

- Backup Electric Supply
- Barrier free Environment
- Notice boards
- Portable water Supply
- Projectors in Class rooms
- Safety Provisions (Laboratory safety)
- Fire extinguisher system, Fire alarm system
- Animal & Microbial waste disposal system
- Sewage Disposal System
- Transport Facility

- First Aid
- LPG Gas bank and distribution system
- Three stair ways & Elevator

8.1.2 Hostel (boys and girls), transportation facility, and canteen (2) Institute Marks 2.00

Hostels	No. of rooms	No. of students accommodated
Hostel for Boys:	**15**	**44**
Hostel for Girls:	**10**	**26**

8.1.3 Electricity, power backup, telecom facility, drinking water, and security (4) Institute Marks 4.00

(Instruction: Specify the details of installed capacity, quality, availability, etc.)

- **Electricity:** Calcutta Electricity Supply Corporation (CESC) 3 Phase line with 300 kVa capacity, separate transformer installed exclusively for the institute.
- **Power backup:** Exclusive Generator with 125 kVa capacity, seperate Power backup through UPS for all computers
- **Telecom facility:** Separate 3 Nos. BSNL including 2 Nos Faxing facilities, EPABX system is installed to provide intercom connection facility to receive inward and outward telephone calls, restricted internet accesses to computers provided to faculty members and the computer labs.
- **Security:** 24 x 7 security persons deployed at the campus haired from external agencies. Contractual person are engaged through administration department on a daily basis for disposing off all waste material cleaning of toilets rooms corridors laboratories and other activities like gardening plantations environmental protection

8.2 Organisation, Governance, and Transparency (10) Total Marks 10.00

8.2.1 Governing body, administrative setup, and functions of various bodies (2) Institute Marks 2.00

(Instruction: List the governing, senate, and all other academic and administrative bodies; their memberships, functions, and responsibilities; frequency of the meetings; and attendance therein, in a tabular form. A few sample minutes of the meetings and action taken reports should be annexed.)

Sl. No.	As per AICTE guidelines	GOB Members
The Governing Body shall have at least eleven members including the Chairman and the Member-Secretary. The Registered Society/Trust shall nominee six members including the Chairman and the Member-Secretary, and the remaining five members shall be nominated as indicated below		
a)	**Chairman** to be nominated by the Registered Society/Trust The **Chairman** of the Governing Body shall preferably be a technical person either entrepreneur of an industrialist or an educationist of repute who is interested in development of technical education and as demonstrated an interest in promotion of quality education	Mr. Arnab Roy, Co-Founder & Director, NSHM Knowledge Campus, Kolkata: **Chairman**
b)	Principal / Director of the concerned technical institution (as nominee of society / trust) – **Member Secretary**	Prof. (Dr.) Subhasis Maity, Director, NSHM College of Pharmaceutical Technology, Kolkata: **Member Secretary**
c)	Two to five members to be nominated by the Registered Society / Trust, **Members**	Mr. Cecil Antony, Managing Trustee: **Members** Mr. Rajib Chanda, Co-Founder & Director NSHM Knowledge Campus, Kolkata: **Members** Prof. Krishnendu Sarkar, Director, NCMT, Kolkata: **Members** Prof. Naveen Das, Director, NBS, Kolkata: **Members**
d)	Nominee of the All India Council for Technical Education – Regional Officer (**Ex-Officio Members**)	All India Council for Technical Education-Regional Officer (AICTE- ERO), Kolkata: **Ex-Officio Members**
e)	Nominee of the Affiliating Body / University / State Board of Technical Education: **Nominated Member**	Dr. Sitanath Mazumdar, Prof. Dept. of MBM, University of Calcutta (**WBUT Nominee**)
f)	Nominee of the State Government – Director of Technical Education (ex-officio): **Nominated Member**	Dr. Sajal Dasgupta, Director, Directorate of Technical Education, Govt. of West Bengal: **Nominated Member**
g)	An Industrialist / technologist / educationist from the Region nominated by the State Government: **Nominated Member**	Dr. Srimanta Patra, Associate. Professor, Govt. College of Engineering & Ceramic Technology, Kolkata (**State Govt. Nominee**)
		Management

i)	An Industrialist / technologist / educationist from the Region to be nominated by the concerned Regional Committee as nominee of the Council, out of the panel approved by the Chairman of the Council. **Member**	Mr. Kalyan Debnath, Executive Vice President, Peerless, Kolkata: **Member** Mr. Subrata Ray, Sr. Manager, Tata Steel, Kolkata: **Member** ***Pharmacy*** Dr. (Mrs.) Neena Sharma, Executive Vice President, Emami Limited, Kolkata: **Member** Prof. Biswajit Mukherjee (Prof., Dept. of Pharmacy, Jadavpur University): **Member**
j)	Two Faculty members to be nominated from amongst the regular staff one at the level of Professor and one at the level of Assistant Professor: **Member**	Dr. Supriya Biswas, Professor - NSHM Business School, Kolkata: **Member** Prof. Tapas Pal, Professor - NSHM College of Pharmaceutical Technology, Kolkata: **Member**
The number of members can be increased equally by adding nominees of the registered Society and by adding an equal number of educationists from the Region keeping in view the interest of the Technical Institution. The total number of members of a Governing Body shall, however, not exceed 21		

Responsibilities of Governing Body

1. Governing Body members are nominated on the basis of AICTE regulation.
2. Conduct quarterly meetings for continuous upgradation of academic performance.
3. Analysis semester results of the students and advise on developmental issues.
4. Faculty selection process, Faculty achievement and training are assessed.
5. Analysis audited Balance Sheet and Budgetary allocation of regular practical and project work.
6. Admission status & expansion of UG & PG programmes.
7. Scope for placement and future developments and planning.
8. Resource verification & employees' welfare activities.
9. Measures for prevention of ragging.

2. Academic & Laboratory Development Committee -

i. Mr. Tapas Kr. Pal – Convener
ii. Mr. Goutam Pramanik
iii. Dr. Sutapa Biswas Majee
iv. Mr. Nilanjan Sarkar
v. Mr. Pravanjan Bhakta

Responsibilities of Academic & Laboratory Development Committee:

1. To oversee the implementation, management and monitoring of the Institute's Academic quality enhancement programme.
2. To review the Teaching & learning process as per the Institute guidelines annually.
3. To receive Students Feedback regarding teaching and learning process and in case if there are short comings, initiates the remedial efforts.
4. Conducting periodic reviews of lesson plans of teaching, learning and assessment in each department (both theory and practical sessions).
5. Monitoring the improvement in utilization of Lab equipments by special design of Practical classes.
6. Preparation of Class Routine semester wise & year wise
7. Monitoring the programme of internal reviews of learning and teaching
8. To liaise with other committees on matters relating to Academic audit and discuss about remedial measures in the Faculty meetings
9. To advise Institute's Academic Council on any changes to the teaching learning process as well as the academic audit procedures.
10. To convene at least two meetings every semester.

3. Examination Committee:

i. Mr. Angshuman Lahiri – Convener
ii. Dr. Musfiqua Mookerjee
iii. Dr. Tapan Giri
iv. Mr. Dhrubajyoti Sarkar
v. Mr. Samit Bera
vi. Mr. Arup Chatterjee
vii. Mr. Baisnab Das Pathak

Responsibilities of Examination Committee:

1. Ensuring syllabus coverage with respect to time according to course curriculum.
2. Planning and conducting exam events (Sessional, Seminars,Practical Exams, Project Presentation evaluation, etc. inclusive of theory and laboratory practice as prescribed by the curriculum and syllabus committee)
3. Ratifying Board of examiners (internal and external)
4. Monitoring the question paper setting process, evaluation process, tabulation & result declaration processes.
5. Providing guidelines to cut-off timelines to facilitate conduct of two sessional Exams per semester.
6. Redress appeals related to results and exam system
7. Statistical analysis of results
8. Ensuring communication of regulations, amendments and updates to students and faculty, exam relating to mattes well in-time.
9. Ensuring minimal deviations/departures from laid out procedures with respect to duties of all personnel involved in exam duties
10. Convener to conduct a minimum of 4 meetings per semester for appraisals/ratifications/discussion of exam policy matters

4. Admission committee:

i. Dr. Sekhar Kr. Bose- Convener
ii. Mr. Sibram Paria
iii. Mr. Supriya Mana
iv. Mr. Tapas Kr. Pal
v. Mr. Subhankar Dash

Responsibilities of the Admissions Committee:

1. To Monitor and keeping the Institute's requirement for student admission
2. To make recommendations concerning admissions of student of Undergraduate, Post Graduate and Doctoral programme.
3. To function as per norms of statutory bodies such as AICTE, WBUT & Higher Education Dept., Govt of W.B.
4. To provide operational procedures i.e. the roles of staff, involved in the admission process and lay down the framework for a transparent and fair admissions process.
5. To recommend and review admission and re-admission policies that ensure the institute as a highly sought after one by the student-parent community.
6. To review procedure & forms for admission and revise them as needed.
7. To keep the Governing body informed of trends in admissions.
8. The Admissions Committee shall meet at least twice in a semester for 6 months duration to ensure the proper functioning of the Committee by meeting twice in a semester.

5. **Training, Placement & Tour Committee:**

i. Mr. Swarupananda Mukherjee – Convener
ii. Mr. Tapas Kumar Pal
iii. Mr. Nilanjan Sarkar
iv. Dr. Gopa Roy Biswas
v. Mr. Sibram Paria
vi. Mrs. Satarupa Acharjee

Other administrative committees are put in place to ensure the attainment of PEOs & POs.

Sl. No.	Name of the Committees	Frequency of the meetings	Avg. Attendance per meeting
1	Anti Ragging Committee	Annually or as and when required	85%
2	Library Committee	Quarterly	80%
3	Store Committee	Quarterly	80%
4	Statutory Committee (UG & PG)	As per requirement	60%
5	Website Development & Upgradation Committee	Quarterly	60%
6	Journal & Paper Publication Committee	Annually	60%
7	Purchase Committee	Quarterly	80%
8	Event, Seminar & Presentation	Quarterly	60%
9	Infrastructure Committee	As per requirement	60%

Note: Few sample minutes are attached for ready reference.

MINUTES OF ACADEMIC COMMITTEE MEETING OF PHARMACY PORTAL HELD ON 18.11.2015 AT 3:30 P.M. AT PRINCIPAL'S ROOM

Members Present : Prof. (Dr.) Subhasis Maity, Prof. (Dr.) Tapas Kr. Barman, Prof. (Dr.) Goutam Pramanik, Prof Debasis Dutta, Dr. Bijaya Ghosh, Dr. Sutapa Biswas Majee, Mr. Nilanjan Sarkar, Dr. Milu Kr. Ghosh.

AGENDA

I) Scrutiny of application of B.Pharm, 1st year 2015-16 students for Full/Half free-studentship.

In the meeting, the proceedings has been noted as follows

1. Principal's office had issued a Notice on 8th October, 2015 for 1st year B.Pharm students for the academic year 2015-16 to apply for Full/Half free studentship as per H.E Deptt's G.O. vide No. 270-Edn(T) dated 20.06.2014. The last date of application was extended upto 7th November, 2015.
2. Total 12, students of B.Pharm 1st year 2015-16 had applied for Full/Half free studentship according to the eligibility criteria under West Bengal Free Ship Scheme vide DTE Order No. Order No. 4.-(T) dated 13.01.2015.
3. Academic Council members have scrutinized those applications and it has been decided that all 12 applicants may be granted for Full/Half free studentship subject to Personal Interview to be held on 23rd November, 2015 at 4:00 p.m.

Prof.(Dr.) Subhasis Maity — Prof. (Dr.) Tapan Kr. Barman

Prof (Dr.) Goutam Pramanik — Prof. Tapas Kr. Pal

Prof. Debasis Dutta — Prof (Dr.) Bijaya Ghosh

Dr. Sutapa Biswas Majee — Mr. Nilanjan Sarkar

Dr. Milu Kr. Ghosh

MINUTES OF EXAMINATION COMMITTEE MEETING HELD ON 16.11.2015 AT FACULTY ROOM AT 5:30 P.M.

Present : Dr. Subhasis Maity, Dr. Tapas Kr. Barman, Dr. Bijaya Ghosh, Dr. Goutam Pramanik, Prof. Debasis Dutta, Prof. Tapas Kr. Pal, Mr. Sibram Pertia, Dr. Sekhar Kr. Bose, Dr. Gopa Roy Biswas, Dr. Sutapa Biswas Majee, Mrs Sarampa Adhaijee, Mr. K. Dhandal, Mr. Swarupananda Mukherjee, Mr. Supriya Mana, Dr. Souvik Roy, Mr. Angshuman Lahiri, Mr. Sarit Basu, Mr. Sandipan Dasgupta, Mr. Nilanjan Sarkar, Dr. Tapan Kr. Giri, Dr. Milu Ghosh.

In the meeting following Resolution has been taken.

1. As per University norms 75% attendance of student is mandatory for appearing Semester Examination. As per WBUT Rules & Regulations eligibility criteria for appearing in Examination vide Chapter – II, Clause – 4.2, it is permissible to the students who have qualified upto 65% attendance will be allowed to appear the odd Semester Examination 2015.
2. As per the Academic Committee Resolution the following students are not eligible to appear odd Semester Examination 2015 :

Students Name	Attendance
7th Semester	
Gaurav Joshi	51%
Sirpan Chattopadhyay	25%
Subham Sarkar	17%
Sreya Sarkar	2%
Sourav Naskar	11%
Tanika Adhikari	12%
5th Semester – 1st Division	
Kaushik Mahato	35%
Arbin Saha	35%
5th Semester – 2nd Division	
Sumit Das	29%
3rd Semester – 1st Division	
Afrin Yasmin	44%
3rd Semester – 2nd Division	
Sourav Mondal	38%

REF NO. : GBM/NKC-KOL/01/15-16

NSHM KNOWLEDGE CAMPUS

MINUTES OF THE MEETING OF GOVERNING BODY OF NSHM KNOWLEDGE CAMPUS, KOLKATA GROUP OF INSTITUTIONS HELD AT 124 (60), B.L.SAHA ROAD, KOLKATA – 700053 ON 3RD OCTOBER 2015 AT 5.30 P.M.

Present :

Dr. Sajal Dasgupta (Director, Directorate of Technical Education, Member)
Prof.(Dr.) Sitanath Mazumdar (Professor, Department of MBM, University of Calcutta, Alipur Campus, Member)
Dr. Sumanta Kr. Patra (Associate Professor, Govt. College of Engineering & Ceramic Technology, Member)
Prof.(Dr.) Biswajit Mukherjee, (Professor, Department of Pharmaceutical Technology, Jadavpur University, Member)
Dr. Supriya Biswas (Professor, NSHM Business School, Kolkata, Member)
Mr. Kalyan Debnath (Executive Vice President, Peerless, Kolkata, Member)
Mr. Tapas Kr. Pal (Professor, NSHM College of Pharmaceutical Technology, Kolkata, Member)
Dr. Krishnendu Sarkar (Director, NSHM College of Management & Technology, Kolkata, Member)
Dr. Naveen Das (Director , NSHM Business School, Kolkata, Member)
Prof. (Dr.) Subhasis Maity (Director, NSHM College of Pharmaceutical Technology, Kolkata, Member Secretary)
Mr. Arnab Roy (Co-Founder & Director NSHM Knowledge Campus, Kolkata – Group of Institutions, Chairman)

Absent

Mr. Cecil Antony (Managing Trustee, Member)
Mr. Rajib Chanda (Co-Founder & Director, NSHM Knowledge Campus, Kolkata, Member)
Dr. (Mrs.) Neera Sharma, (Associate Vice President, Emami Ltd. Kolkata, Member)

All the members mentioned above were absent due to their personal exigencies. The nominated member of AICTE (Regional) and an industrialist /technologist/educationist from the Region to be nominated by the Regional Committee were also absent in the meeting and it was noted by the members.

1 **Confirmation of Minutes of the last Governing Body Meeting held on 16TH May 2015 at NSHM Knowledge Campus, Kolkata.**

The minutes of last Governing Body meeting held on 15TH May, 2015 were already circulated to the members for their information and record and it was formally confirmed by all the members.

....Cont P/2

2. **Placing of AICTE's Extension of approval letter and steps taken by Institute to overcome AICTE indicated shortfall/deficiencies**

AICTE's Extension of approval letter for the academic year 2015-16 as follows : -

D.Pharm	: 120 seats
M.Pharm (Pharmacology)	: 24 seats
M.Pharm (Pharmaceutics)	24 seats
M.Pharm (Pharmaceutical Chemistry)	: 18 seats
M.Pharm ((Pharmaceutical Analysis & Quality Assurance)	: 18 seats
MBA	: 120 seats
MBA (Part time)	: 60 seats
PGDM	: 60 seats

There was no shortfall reported.

3. **Report on extension of existing intake or introduction of new courses as approved by AICTE**

NSHM College of Pharmaceutical Technology : NCPT obtained NOC from the Govt. of West Bengal, Department of Higher Education for closure of M.Pharm in i) Pharmaceutical Chemistry ii) Pharmaceutical Analysis & Quality Assurance vide letter No. 124(7)Edn(T)/4E-1/2013 dated 26th February, 2013. No new admission to these two courses for the academic session 2015-16 were taken.

4. **Anti ragging measures taken for the coming session**

Anti ragging committee was re-constituted on 1st July, 2015. Affidavit by the students and Affidavit by Parents/Guardian had been taken as per AICTE format at the time of admission for the academic session 2015-2016. No ragging was reported in the last semester in the Campus.

5. **Audited Statement (Statutory Audit) and appointment of external Auditor.**

Audited Balance Sheet for the year ending 31st March, 2015 was tabled and it was approval by all the members.

.....Cont P/3

6. **Admission status of current year**

Course	Intake capacity	Students admitted
B.Pharm	120	120
M.Pharm (Pharmaceutics)	24	12
M. Pharm (Pharmacology)	24	12
MBA	120	111
PGDM	60	12
MBA (Part time)	60	Not launched

7. **Next year's expansion plan for ratification of G.B.**

NCPT had already applied for NBA Accreditation for Under Graduate Programme and E-SAR will be submitted within 29th February, 2016.

Project work of Emami Ltd. is continuing at our Pharmacology laboratory on 25 Nos. of different topics on commercial basis for which Emami will pay us a lump sump amount of Rs. 10.00 Lacs annually.

8. **Assessment of academic performance based on Even Semester Results**

NBS Business School :

There is an improvement in the results of even semester examination of MBA & PGDM courses. This has been due to exposure to industry knowledge and interaction with professionals and faculty participations.

NSHM College of Pharmaceutical Technology:

I) Continuous improvement of UG & PG students' academic performance has been noticed in comparison to previous semester.

9. **NBA Accreditation Process**

As per NBA process we have finalized four Programme Educational Objective (PEOs) & eleven Programme Outcome which are as follow :

Programme Educational Objectives (PEOs)

Graduates coming out of the four year Bachelor of Pharmacy programme from NSHM Knowledge Campus, Kolkata - Group of Institutions, in the long run have

1. Established themselves as successful professionals in the profession of pharmacy with confidence and global competitiveness and make intellectual contributions.
2. Carried out advanced studies and acquired higher qualifications applying his or her knowledge and experience towards an advanced professional degree

.....Cont P/4

3. Attained capabilities to act as successful team members using effective communications and teamwork skills.
4. Pursued a career for life-long learning with personal & professional growth, proper work ethics and character.

Programme Outcome (PO)

1. Ability to acquire knowledge of multi disciplinary Pharmaceutical and Bio Medical Sciences.
2. Ability to perform experiments, analyze & interpret results.
3. Ability to plan project work, assignments, seminars including time and resource management within realistic constraint.
4. Ability to function in teams with motivation and leadership approach.
5. Ability to identify the role as pharmaceutical technologist & health care professional; and communicate its importance to society.
6. An understanding of professional, societal and legal responsibility related to Pharmaceutical Industry & pharmacy practice.
7. An understanding of the impact of pharmacy profession in environment & societal context and demonstrate the need for sustainability.
8. Develop ethical responsibility and values in communication & lifestyle.
9. An ability to communicate effectively.
10. An ability to use advanced analytical techniques, skills and modern operating tools necessary in pharmacy profession.
11. Recognize the need for and an ability to engage in lifelong learning

.... Cont P/5

9. **Miscellaneous**

As proposed previously, the PGDM curriculum has been modified to better align with the industry requirement . A new specialization has been added. The revised PGDM curriculum is being effective from 2014-16 batch onwards.

There being no other issue to transact, the meeting ended with vote of thanks to the Chair.

Place : Kolkata
Date : 03/10/2015

Arnab Roy
Chairman – NSHM Knowledge Campus,
Kolkata - Group of Institutions

GOVERNING BODY MEETING

The Governing Body Meeting is scheduled on 3rd October, 2015 at 5:30 p.m. on the following agenda : -

1. Confirmation of Minutes of the last Governing Body Meeting.
2. Placing of AICTE's Extension of approval letter and steps taken by Institute to overcome AICTE indicated shortfall/deficiencies.
3. Report on Extension of existing intake or introduction of new courses as approved by AICTE.
4. Anti-ragging measures taken for the coming session.
5. Audited Statement (Statutory Audit) and appointment of external Auditor.
6. Admission status of current year.
7. Next year's expansion plan for ratification of G.B.
8. Assessment of academic performance based on Even Semester Results.
9. NBA Accreditation process
10. Miscellaneous

Dr. Sajal Dasgupta (Member) — Dr. Sitanath Mazumdar (Member)

Dr. Sumanta Kr. Patra (Member) — Mr. Kalyan Debnath (Member)

Dr. (Mrs.) Neera Sharma (Member) — Dr. Biswajit Mukherjee (Member)

Dr. Supriya Biswas (Member) — Mr. Tapas Kr. Pal (Member)

Mr. Naveen Das (Member) — Dr. Krishnendu Sarkar (Member)

Mr. Rajib Chanda (Member) — (Mr. Cecil Antony) (Member)

Dr. Subhasis Maity (Member) — Mr. Arnab Roy (Chairman)

8.2.2 Defined rules, procedures, recruitment, and promotional policies, etc. (2) Institute Marks 2.00

(Instruction: List the published rules, policies, and procedures; year of publications; and state the extent of awareness among the employees/students. Also comment on its

availability on the internet, etc.)

SECTION	TOPIC
1	NSHM – Quality Policy
2	NSHM – Social/New Media Guidelines
3	Probation Policy
4	Identification Card Policy
5	Policy on Working Hours, Attendance & Punctuality
6	Policy on Declared Holidays
7	Policy on Bandhs & Forced Closure
8	Leave Policy
9	Remuneration Policy
10	Domestic Travel Policy
11	Incentives for Ph.D./M.Phil & M.Tech
12	Policy on Consultancy/Project Assignments
13	Policy on Separation from the Organization
14	Policy to deal with Cases of Sexual Harassment at Work Place
15	Policy on Employee Grievance Procedure
16	Policy on Disciplinary action

The above polices are published in the form of HR manual which is circulated to all faculty members and stuff members through intranet (institute Server).

Refer web link – http://172.16.2.3/hrmanual

8.2.3 Decentralisation in working including delegation of financial power and grievance redressal system (3) Institute Marks 3.00

(Instruction: List the names of the faculty members who are administrators/decision makers for various responsibilities. Specify the mechanism and composition of grievance redressal system, including faculty association, staff-union, if any.)

Details of various committees, its members & responsibility - Annexed

Student Grievance Committee Details

S.No	Appointment Reference	Date of Appointment	Member	Profession	Address	Associated with	Mobile No	e-mail
1	NKC-GOI/GRC-1/12	06/01/2012	Mr. Rajkumar Dasgupta	Assistant Professor	124, B.L Saha Road, Kolkata 53	NSHM Knoledge Campus, Kolkata 53	9830933820	rajkumar.dasgupta@nshm.com
2	NKC-GOI/GRC-2/12	06/01/2012	Dr. Gopa Roy Biswas	Assistant Professor	124, B.L Saha Road, Kolkata 53	NSHM Knoledge Campus, Kolkata 53	9830532455	gopa.biswas@nshm.com

8.2.4 Transparency and availability of correct/unambiguous information (3) Institute Marks 3.00

(Instruction: Availability and dissemination of information through the Internet. Information to be provided in accordance with the Right to Information Act, 2005).

The college maintains transparency in all its operation and working. Information such as Internal marks scored by students, shortage of attendance, if any. Availability of scholarships, opportunities for students etc. are promptly displayed on Notice Boards. At the end of every semester, faculty has to give an individual Semester SELF-

APPRAISAL report, which helps faculty to evaluate their own performance during the period. Criteria for student scholarships are informed well in advance so that equal opportunity is given to all individuals concerned.

At the beginning of every academic year the college brings out a Rule book which contain all the information, required by a student to carry out his/her studies in the college. Information about every activity in the college are sent to all staff and students through e-mail.

All the required information about the college are made available, as per directions of AICTE, in the college website: www.nshm.com . Information sought under RTI act is promptly furnished by the Principal/Director.

8.3 Budget Allocation, Utilisation, and Public Accounting (10) — Total Marks 9.00

(Instruction: The preceding list of items is not exhaustive. One may add other relevant items if applicable.)

Summary of current financial year's budget and the actual expenditure incurred (exclusively for the institution) for three previous financial years.

Item	Budgeted in CFY 2015-2016	Expenses in CFY 2015-2016	Expenses in CFYm1 2014-2015	Expenses in CFYm2 2013-2014
Infrastructure built-up	3000000	136418	5933220	4397778
Library	250000	230895	155458	160001
Laboratory equipment	300000	184610	0	178868
Laboratory consumables	500000	513141	258808	428888
Teaching and non-teaching staff salary	40000000	33699115	39453603	30352823
R&D	100000	12568	76532	0
Training and Travel	250000	74242	245274	216022
Misc Expenses for Academic activities	20000000	14405542	19168066	14373764
other2	10000000	8081985	10408246	8603064
Total	74400000	57338516	75699207	58711208

8.3.1 Adequacy of budget allocation (4) — Institute Marks 4.00

(Instruction: Here the institution needs to justify that the budget allocated over the years was adequate.)

Budget requirements under 'recurring' and 'non-recurring' heads are collected from every departments and sections before the commencement of the financial year. Allocations are made as per the availability of funds. Spending is monitored by the accounts section. Supplementary allocations are made in special cases. The institution carefully monitors the expenses so that the necessities are met without affecting the smooth working of the institution. The management has been very efficiently doing this over the past several years that the institution never had any serious budget crunch that affected the functioning of the college.

8.3.2 Utilisation of allocated funds (5) — Institute Marks 4.00

(Instruction: Here the institution needs to state how the budget was utilised during the last three years.)

Funds are allocated by the CAMPUS DIRECTOR. Department Heads / Portal-in-charges are intimated of the extent of funds allocated against their budget proposals. Major works like construction, up-gradation of existing infrastructure, procurement and maintenance of common utilities, house-keeping, procurement of furniture etc. are controlled directly by the Campus Director. Actions for procurement of lab equipment, up-gradation of existing lab facilities, purchase of consumables etc. are initiated from the respective departments and the funds are released on a case by case basis from the accounts office of the college on approval by the Director.

During the last three years, the budget was utilized to meet expenses such as staff salary, infrastructure development, purchase of equipment, expenses towards consumables and contingencies, travel etc. Every year almost 60% of the budget is spent on staff salary, 5% on infrastructure development, about 1% on purchase of lab equipment & consumables , about 0.5-1% on library development and the rest 25-34% on misc. academic related and other expenses. This has been the general pattern of utilization of budget for the last 3 years.

8.3.3 Availability of the audited statements on the institute's website (1) — Institute Marks 1.00

(Instruction: Here the institution needs to state whether the audited statements are available on its website.)

As of now, the audited statements of accounts of the college are not made available on the college website. However, this can be done with the permission of the Governing body and the Board of Trustees of the INSTITUTE.

8.4 Programme Specific Budget Allocation, Utilisation (10) — Total Marks 10.00

Summary of budget for the CFY and the actual expenditure incurred in the CFYm1 and CFYm2 (exclusively for this programme in the department):

Items	Budgeted in 2015-2016	Actual Expenses in 2015-2016	Budgeted in 2014-2015	Actual Expenses in 2014-2015	Budgeted in 2013-2014	Actual Expenses in 2013-2014
Laboratory equipment	300000	184610	200000	0	200000	178868
Software	300000	275953	250000	296778	200000	38761

R&D	100000	12568	100000	76532	0	0
Laboratory consumables	500000	513141	400000	237752	400000	428888
Maintenance and spares	600000	428094	600000	584647	500000	457692
Training and Travel	100000	39761	100000	81323	75000	32169
Miscellaneous expenses for academic activities	10000000	7563802	10000000	9863023	8000000	6679625
Others	5000000	4028274	5000000	5157962	5000000	4223662
Total	16900000	13046203	16650000	16298017	14375000	12039665

8.4.1 Adequacy of budget allocation (5) Institute Marks 5.00

(Instruction: Here the institution needs to justify that the budget allocated over the years was adequate.)

The budget is progressively modified to meet the new facilities for equipment, maintenance of existing lab equipments as well as chemicals, animals & other consumables and new labs due to revision in syllabi. Budget requirements under recurring and non-recurring heads are collected from every departments and sections before the commencement of the financial year. Allocations are made as per availability of funds.

Expenditure is monitored by the accounts section. Supplementary allocations are made in special cases. The institutional head carefully monitors the expenses so that the necessities are met without affecting the smooth working of the institution. The management has been very efficiently doing this over the past several years that the institution never had any serious budget crunch that affected the functioning of the college.

8.4.2 Utilisation of allocated funds (5) Institute Marks 5.00

(Instruction: Here the institution needs to state how the budget was utilised during the last three years.)

Funds are allocated through the Budget proposals. Department Heads are intimated of the extent of funds allocated against their budget proposals. Actions for procurement of lab equipment, up-gradation of existing lab facilities, purchase of consumables, animals, furniture etc. are initiated from the department and the funds are released on a case by case basis from the accounts office of the college on approval by the Campus Director. During the last three years, the budget was utilized to meet expenses like purchase of equipment, expenses towards consumables and contingencies, etc.

8.5 Library (20) Total Marks 16.00

8.5.1 Library space and ambience, timings and usage, availability of a qualified librarian and other staff, library automation, online access, networking, etc. (5) Institute Marks 5.00

(Instruction: Provide information on the following items.).

• Library Services	Yes
• Carpet area of library (in m2)	425.18
• Reading space (in m2)	275
• Number of seats in reading space	171
• Number of users (issue book) per day	69 (NCPT)/11 (NBS)
• Number of users (reading space) per day	89 (NCPT)/12 (NBS)
• Timings: During working day, weekend, and vacation	9:30 A.M to 6:30 P.M
• Number of library staff	3 (NBS/NCPT)
• Number of library staff with degree in Library	3
• Management Computerisation for search, indexing, issue/return records Bar coding used	In process.
• Library services on Internet/Intranet INDEST or other similar membership Archives	Through internal library portal, running on intranet.

The learning is made student centric by the following methods:

- Providing text books and reference books for self study.
- Digital library and intranet facility for value addition.
- Availability of e-learning resources (CDs & DVDs) for independent learning.
- Access to various e-databases & e-journals for accquiring competency beyond syllabus.
- Students are encouraged to use internet facilities for the seminar and project topics for advanced learning

8.5.2 Titles and volumes per title (4) Institute Marks 3.00

Year	Number Of New Titles Added	Number Of New Editions Added	Number Of New Volumes Added
2013-2014	40	0	413
2014-2015	21	0	131
2015-2016	54	0	314

8.5.3 Scholarly journal subscription (3) Institute Marks 2.00

Details	2015-2016	2014-2015	2013-2014	2012-2013

Science as soft copy	0	0	0	0
Science as hard copy	0	0	0	0
Engg. and Tech. as soft copy	0	0	0	0
Engg. and Tech. as hard copy	0	0	0	0
Pharmacy as soft copy	4	5	6	8
Pharmacy as hard copy	23	28	32	38
Architecture as soft copy	0	0	0	0
Architecture as hard copy	0	0	0	0
Hotel Management as soft copy	0	0	0	0
Hotel Management as hard copy	0	0	0	0

8.5.4 Digital Library (3) Institute Marks 3.00

• Digital Library Services	Yes
• Availability of digital library contents (If available, then mention number of courses, number of e-books, etc. Availability of an exclusive server)	Under process
• Availability of an exclusive server	Yes
• Availability over Intranet/Internet	Yes
• Availability of exclusive space/room	Yes
• Number of users per day	10

8.5.5 Library expenditure on books, magazines/journals, and miscellaneous content (5) Institute Marks 3.00

Year	Expenditure (in Rs.)				Comments, If Any
	Book	Magazines/Journals (for hard copy subscription)	Magazines/Journals (for soft copy subscription)	Misc. Contents	
2013-2014	100566	59435	0	0	
2014-2015	76798	78660	0	0	
2015-2016	60435	70460	0	0	

8.6 Internet (5) Total Marks 3.00

Institute Marks 3.00

(Instruction: The institute may report the availability of the Internet in the campus and its quality of service.)

• Internet Services	Yes
• Name of the Internet provider	TATA TELESERVICE LTD & DISHNET WIRELESS LTD
• Available bandwidth	2 MBPS
• Access speed	2 MBPS
• Availability of Internet in an exclusive lab	Exclusive Internet Lab with more than 200 systems
• Availability in most computing labs	17 Department labs with Internet facility
• Availability in departments and other units	Staff rooms are equipped with wired internet
• Availability in faculty rooms	1:1 computers are made available for faculty
• Institute's own e-mail facility to faculty/students	Yes. NAME@NSHM.COM for each faculty
• Security/privacy to e-mail/Internet users	Restricted access with individual user ID/Password

8.7 Safety Norms and Checks (5) Total Marks 5.00

8.7.1 Checks for wiring and electrical installations for leakage and earthing (1) Institute Marks 1.00

- All electrical equipments and installations are checked at start of semester- Half Yearly
- Fire extinguishers are recharged after expiry date of constituents.
- Earthings are checked for conductivity- Annually
- Electricity Generator housed out of institute building.
- MCBs are used at all electrical installations.
- Sufficient Earth connections are provided.

8.7.2 Fire-fighting measurements: Effective safety arrangements with emergency / multiple exits and ventilation/exhausts in auditoriums Institute Marks 1.00

and large classrooms/laboratories, fire-fighting equipment and training, availability of water, and such other facilities (1)

- Sufficient fire extinguishers are provided.
- Sand and water reserves are kept for exigency purposes .
- Two exit doors from each class rooms as well as Laboratory.
- Multiple stairways provided for quick exit in case of emergency
- Exit signs and floor indication boards are fixed at strategic locations.

8.7.3 Safety of civil structure (1) Institute Marks 1.00

Buildings are constructed according to the plans sanctioned by appropriate civic authorities. Extreme caution has been taken while constructing building with the most modern technologies. Moreover all the civil structures are inspected by in house civil engineer.

The following measures have been taken for the safety of civil structures.

1. Civil structure are constructed with adequate design features to bear all natural calamities

2. Proper and periodical preventive maintenance are arranged.

3. Adequate water draining facility is provided.

4. Leak proofing and weather proofing measures are taken periodically.

5. Adequate lightning protection devices are installed.

8.7.4 Handling of hazardous chemicals and such other activities (2) Institute Marks 2.00

(Instruction: The institution may provide evidence that it is taking enough measures for the safety of the civil structures, fire, electrical installations, wiring, and safety of handling and disposal of hazardous substances. Moreover, the institution needs to show the effectiveness of the measures that it has developed to accomplish these tasks.)

The following safety precautions and measures have been taken for the safe handling of hazardous chemicals, and for other activities requiring such measures.

1. While working in chemical laboratory always more than one person are engaged.

2. Provided required personal protective equipment like lab coat & gloves.

3. Labeling of all containers with chemical contents.

4. Awareness given to all concerned to keep hands and face clean whenever they leave the lab.

5. Instructions given to avoid direct contact with any chemical and always wear a laboratory coat.

6. Keep chemicals off hands of laboratory personnel, face and clothing, including shoes.

7. Never smell, intentionally inhale or taste a chemical.

8. Smoking, drinking, eating and application of cosmetics is forbidden in areas where hazardous chemicals are used or stored.

9. Always use chemicals with adequate ventilation or in a chemical fume hood. Refer to the MSDS and the Standard Operating Procedure to determine what type of ventilation is needed.

10. Use hazardous chemicals only as directed and for their intended purpose.

11. **Never** use mouth suction to fill a pipette. Use a pipette bulb or other pipette-filling devices.

12. Electrically ground containers using approved methods before transferring or dispensing a flammable liquid from a large container.

8.8 Counselling and Emergency Medical Care and First-aid (5) Total Marks 4.50

Institute Marks 4.50

(Instruction: The institution needs to report the availability of the facilities discussed here.)

Counseling facility is available for students at the following three levels

- Academic Counseling: Each faculty member as batch coordinator is entrusted with 60 students to keep track of their progress and performance. Class committee meetings with class representatives are conducted frequently to know the problems & other issues of students
- Personal Counseling: There are professional counsellors in the Collegeor providing Psycho-social Counseling. Students are free to approach these councilors for help and support. Also the students can contact their respective faculty mentor for guidance on any issue affecting them.
- Career Counseling: Career guidance and motivational programs by Alumni, External guest and faculty members are organized often. Faculty in charge of Career & placement cell of the college under the guidance of a Director of the institute offers regular career counseling.

Necessary medical facilities for emergency medical care are available.

- A Govt. hospital (M R BANGUR Hospital, Tollygunge) is available very adjacent to the campus. Full time doctors (2), nursing staff (4), pharmacist, X-ray technician, lab technician and clerical staff man the facility.
- A modern private hospital (RSV Hospital) with all modern facilities like MRI and CT Scan is just 4 km away. It has most of the specialized departments manned with about 20 doctors and supporting staff.
- Vehicles are available in the college to transport anybody to any of these nearby hospitals in time of need / emergency.

9 Continuous Improvement (75) **Total Marks 45.25**

9.1 Improvement in Success Index of Students (5) **Total Marks 4.68**

Institute Marks 4.68

From 4.1

a, b and c are the success indices which correspond to LYGm2, LYGm1 and LYG respectively

Assessment = (b-a) + (c-b) + (a+b+c)x(5/3)

Items	2010-2011(c)	2009-2010(b)	2008-2009(a)	Assessment
Success Index	0.90	0.97	1.00	4.68

9.2 Improvement in Academic Performance Index of Students (5) **Total Marks 3.85**

Institute Marks 3.85

From 4.2

a, b and c are calculated respectively for LYGm2, LYGm1 and LYG by dividing the API values, obtained from the criterion 4.2 by 10 .

The maximum value of a, b, and c should not exceed one.

Assessment = (b-a) + (c-b) + (a+b+c)x(5/3)

Items	2010-2011(c)	2009-2010(b)	2008-2009(a)	Assessment
API	0.77	0.77	0.77	3.85

9.3 Improvement in Student-Teacher Ratio (5) **Total Marks 3.64**

Institute Marks 3.64

From 5.1

a, b and c are calculated respectively for CAYm2, CAYm1 and CAY by dividing the STR values, obtained from the criterion 5.1 by 20.

The maximum value of a, b, and c should not exceed one.

Assessment = (b-a) + (c-b) + (a+b+c)x(5/3)

Items	2014-2015 (c)	2013-2014 (b)	2012-2013 (a)	Assessment
STR	0.72	0.75	0.70	3.64

9.4 Enhancement of Faculty Qualification Index (5) **Total Marks 4.97**

Institute Marks 4.97

From 5.3

a, b and c are calculated respectively for CAYm2, CAYm1 and CAY by dividing the FQI values, obtained from the criterion 5.3 by 10.

The maximum value of a, b, and c should not exceed one.

Assessment = (b-a) + (c-b) + (a+b+c)x(5/3)

Items	2014-2015 (c)	2013-2014 (b)	2012-2013 (a)	Assessment
FQI	0.99	1.00	1.00	4.97

9.5 Improvement in Faculty Research Publications, R&D Work and Consultancy Work (10) **Total Marks 1.11**

Institute Marks 1.11

From 5.7 & 5.9

a, b and c are calculated respectively for CAYm2, CAYm1 and CAY by dividing the FRP and FRDC values, obtained from the criterion 5.7 and 5.9 by 20 .

The maximum value of a, b, and c should not exceed one.

Assessment = (b-a) + (c-b) + (a+b+c)x(5/3)

Items	2014-2015 (c)	2013-2014 (b)	2012-2013 (a)	Assessment
FRP	0.19	0.50	0.44	2.13
FRDC	0.03	0.04	0.00	0.09

9.6 Continuing Education (10) — Total Marks 0.00

Institute Marks 0.00

In this criterion, the institution needs to specify the contributory efforts made by the faculty members by developing the course/laboratory modules, conducting short-term courses/workshops, etc., for continuing education during the last three years.

Module Description	Any Other Contributory Institute/Industry	Developed/Organized By	Duration	Resource Persons	Target Audience	Usage and Citation,etc

9.7 New Facility Created (15) — Total Marks 12.00

Institute Marks 12.00

Infrastuctural Development	For Strengthening POs
Addition of Class rooms & Tutorial Rooms in 3rd floor	PO No.1
New PG cum UG Laboratoris in 3rd & 4th floor : - Pharmaceutics, Pharmacology & Pharmaceutical Chemistry Lab.	PO Nos.1,2,10,11
AC Seminar Room in 3rd floor - capacity 150	PO Nos. 9,11
AC Animal Room in 4th floor - As per approved layout of CPSCA , formation of ethical committee.	PO Nos. 2,3,7,8,10
Addition of Common Rooms - Boys, Girls , Gymnasium and cafeteria in 4th floor & addition of 2nd Elevator	PO Nos. 6,7,8
Distribution of Gas for Laboratory use - Changed from laboratory wise localised supply from gas cylinder to centralised supply through pipe line from gas bank	PO Nos. 6,7,8
Addition of New Instruments & Lab Equipments	For Strengthening POs
HPLC, Isocratic System with UV detector - Waters	PO Nos. 1,2,3,10,11
FTIR - with ATR attachment - Bruker Gmbh	
Digital Balance (0.1mg) & pH Meter - Metler	
8 Stn. Dissolution Test apparatus , microprocessor controlled - lab India	
Brookfield Viscometer	
Digital Plethysmograph	
Data Acquisition System	
Projection Microscope - with trinocular head	
10 Stn. Rotary Tablet compression Machine - Karnavati	
Stability Chamber for Stability Study	
SS Tray Drier	
Multipurpose Drive for Manufacturing Solid Dosage Form with removable attachments, eg. - Coating pan, Polishing pan, Oscillating Granulator, Kneader, Planetary mixer	

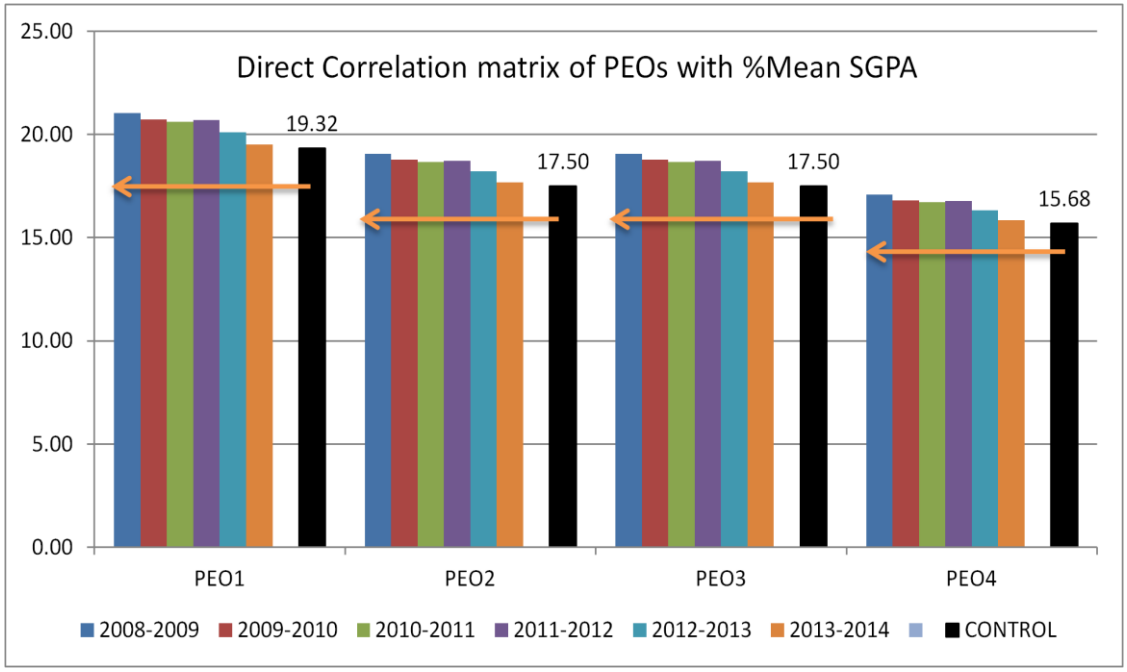
9.8 Overall improvement since last accreditation, if any, otherwise, since the commencement of the programme (20) — Total Marks 15.00

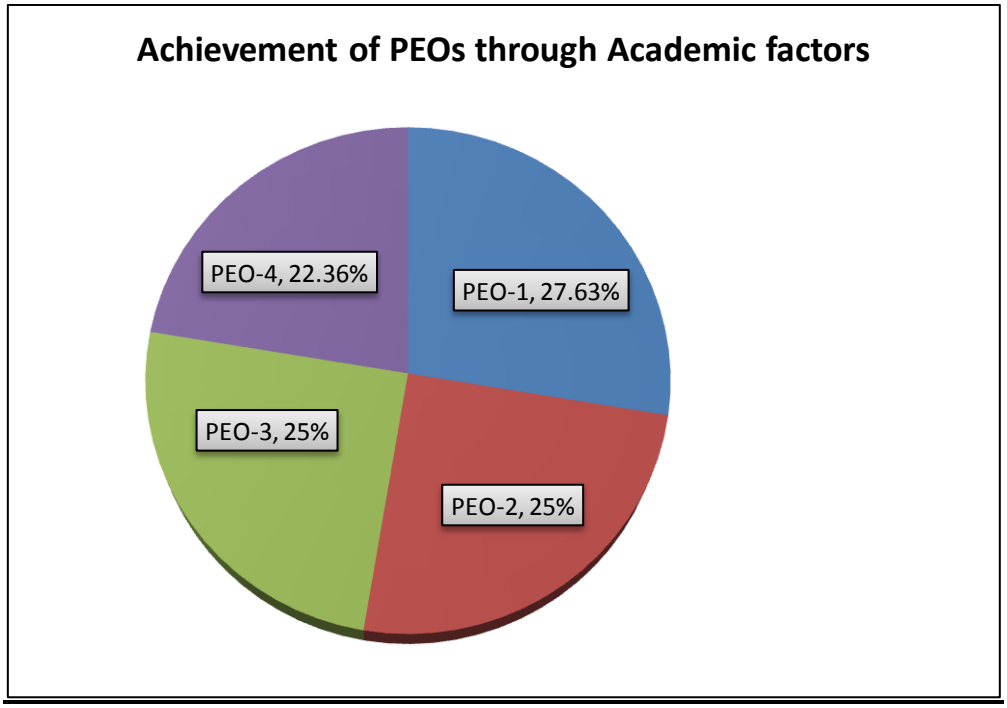
Specify the overall improvement

Specify the Strenghths/Weakness	Improvement Brought In	Contributed By	List the PO(s), which are strengthened	Comments, if any
2014-2015	Research publication in various peer reviewed journals. -Faculty & students are involved in Research oriented projects; Faculty development & continuing education programme need a boost.-Faculty and staff members need to be motivated for skill upgradation; Collaboration with premier research institutions is in formative stage. - Industry linked research funding and Research projects from DST / CSIR / ICMR etc.	NSHM MANAGEMENT & FACULTY MEMBERS	PO - 1,2,3,5,6,8,10,11	WEAKNESS need to be addressed
2013-2014	Committed, experienced and enthusiastic faculty members.- All faculties are having M. Pharm degree withmore than 50% are with Ph.D. and rest others are persuing Ph.D. DEGREE; Motivational environment and awards for students. students are facilated for regular attendance, academic performances as well as extra curricular activities.	NSHM MANAGEMENT & FACULTY MEMBERS	PO - 1,2,3,4,5,6,7	STRENGTH need to be nurtured
2012-2013	Excellent infrastructure with respect to classrooms, laboratories, computer centre for teaching learning and good ambience - Improvement in course delivery by the use of SMART Classrooms, well -equiped labs and ppt presentations in PCs; Well-equipped library facilities and learning resources, intranet, internet and website.- Study materials are available on Web particularly to help the students.	NSHM MANAGEMENT & FACULTY MEMBERS	PO - 1,2,3,6,8,10,11	STRENGTH need to be followed up
2011-2012	Good Governance and inspiring leadership and committed management for quality education.- Well organised facilities and infrastructure provided along with propective placement activities; Strong institutional leadership supports quality culture based on dissemination of knowledge..- Organize different PROFESSIONAL events such as seminar, workshop, training, conference.	NSHM MANAGEMENT & FACULTY MEMBERS	PO - 1,2,3,4,9,10	STRENGTH - FOR contnuous follow up

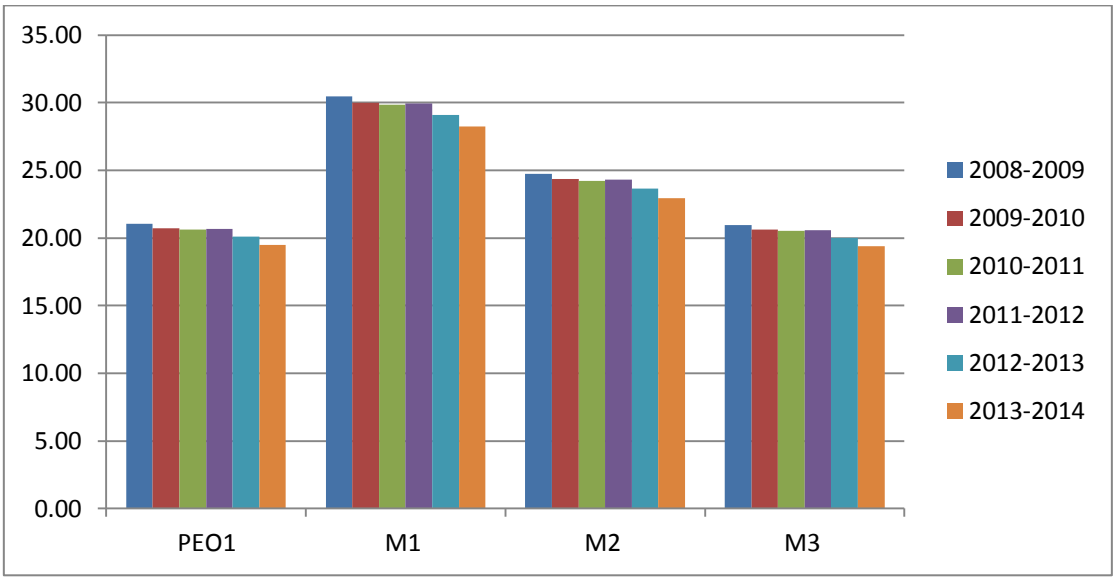
ANNEXURE TO PART B-1

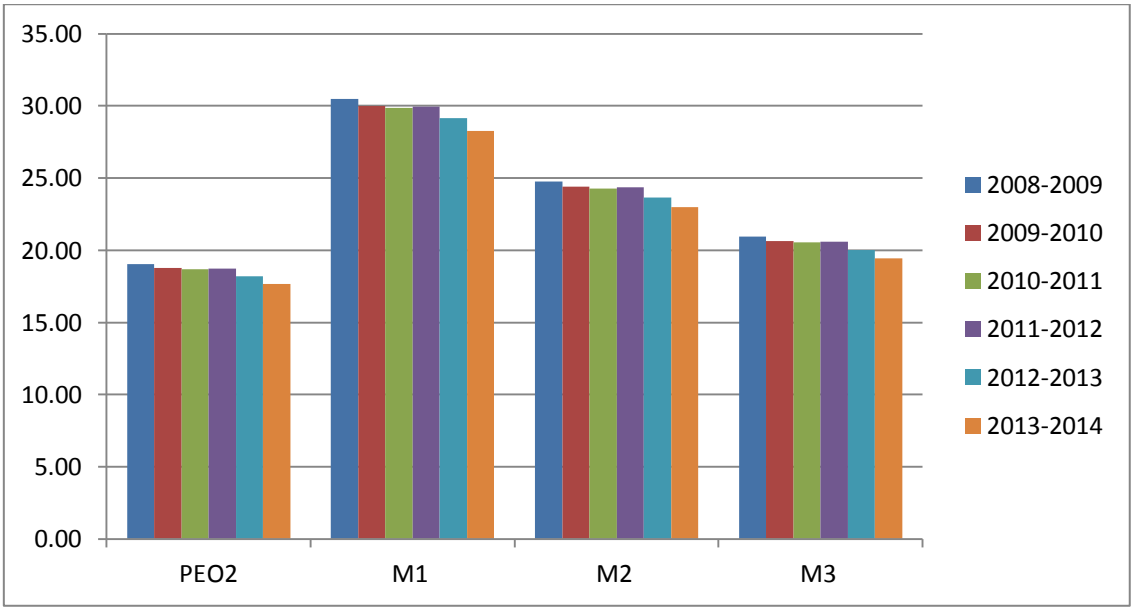
DIRECT ASSESSMENT OF PEO AND MISSION COMPONENTS

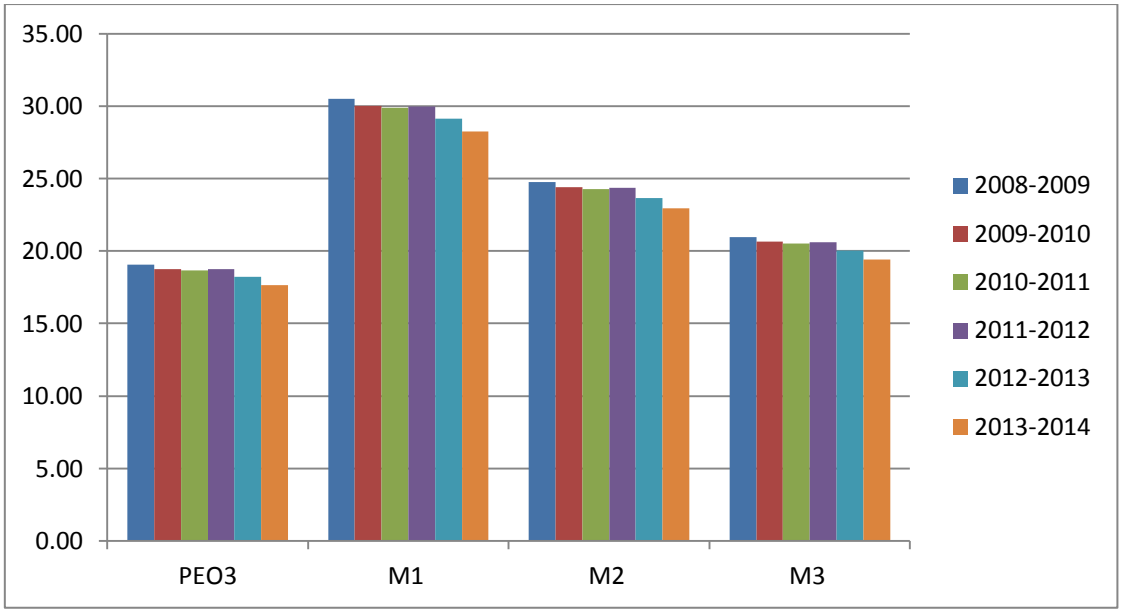




CORRRELATION MATRICES OF PEOS WITH MISSION & VISION COMPONENTS



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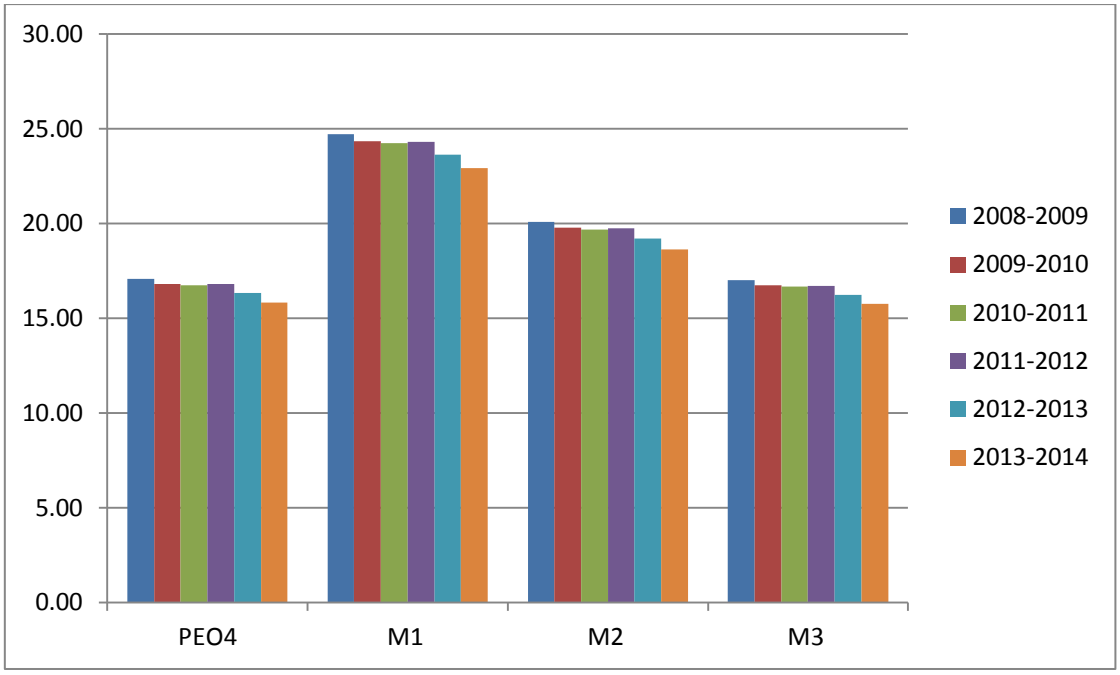
PEO3
M1
M2
M3
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014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PEO4
M1
M2
M3
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014

	PEO 1			PEO 2			PEO 3			PEO 4		
PROGRAMME OUTCOMES	% of students Achieved High Competence level (≥7 Grade Pt in 10 Pt scale)			% of students Achieved High Competence level (≥7 Grade Pt in 10 Pt scale)			% of students Achieved High Competence level (≥7 Grade Pt in 10 Pt scale)			% of students Achieved High Competence level (≥7 Grade Pt in 10 Pt scale)		
	2012-13	2013-14	2014-15	2012-13	2013-14	2014-15	2012-13	2013-14	2014-15	2012-13	2013-14	2014-15
PO 1	61.74	60.67	60.45	61.74	60.67	60.45				61.74	60.67	60.45
PO 2				92.79	91.38	93.74				92.79	91.38	93.74
PO 3	98.33	99.33	88.00	98.33	99.33	88.00				98.33	99.33	88.00
PO 4	96.83	96.80	95.37				96.83	96.80	95.37	96.83	96.80	95.37
PO 5	66.13	68.27	60.40				66.13	68.27	60.40	66.13	68.27	60.40
PO 6	73.47	74.67	70.60				73.47	74.67	70.60	73.47	74.67	70.60
PO 7										79.00	63.50	65.00
PO 8	84.38	82.25	83.63				84.38	82.25	83.63	84.38	82.25	83.63
PO 9	87.38	86.75	80.63	87.38	86.75	80.63	87.38	86.75	80.63	87.38	86.75	80.63
PO 10				73.83	77.57	76.67						
PO 11				73.25	79.00	69.50				73.25	79.00	69.50
Avg.	**81.18**	**81.25**	**77.01**	**81.22**	**82.45**	**78.16**	**81.64**	**81.75**	**78.12**	**81.33**	**80.26**	**76.73**

Atainment level	HIGH (>75%)	MODERATE (60% - 75%)	LOW (<60%)			
	2012-2013		2013-2014		2014-2015	
DIRECT ASSESSMENT	Atainment level	AVG. ATTAINMNET	Atainment level	AVG. ATTAINMNET	Atainment level	AVG. ATTAINMNET
PEO 1	H	H	H	H	H	H
PEO2	H	H	H	H	H	H
PEO 3	H	H	H	H	H	H
PEO 4	H	H	H	H	H	H

YEAR	TOTAL STUDENTS	HIGHER STUDY (%)	MARKETING JOB (%)	INDUSTRY JOB (%)	OHER PROFESSION (%)	ENTERPRENEURSHIP (%)	PLACEMENT INDEX (%)	total	% OF STUDENTS CLEARED COMPETATIVE EXAM	
2012-2013	43	23.3	23.3	16.3	7.0	11.6	58.1	81.4	23.3	10 = GPAT – 4, PGET – 3, BITS - 3
2013-2014	54	51.9	7.4	13.0	14.8	1.9	37.0	88.9	51.9	**28 = GPAT-12**, PGET-11, NIPER-1, BITS-2, GRE-1, BHU-1
2014-2015	72	33.3	33.3	13.9	8.3	0.0	55.6	88.9	33.3	**24 = GPAT-3**,PGET-15, NIPER-3, BITS-4,BHU-1

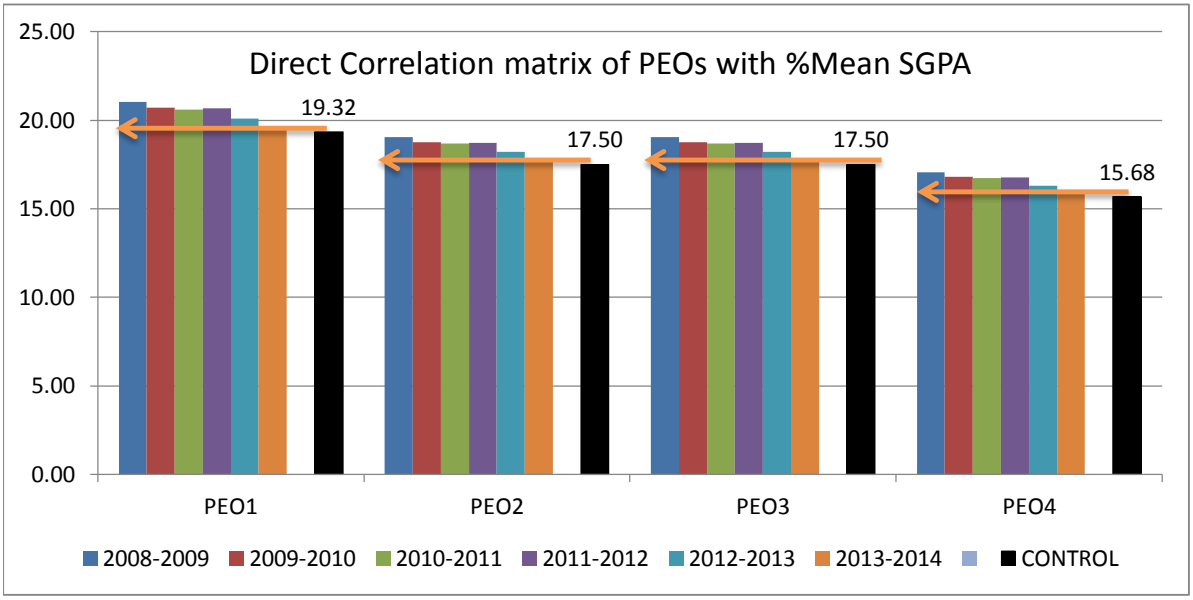
Atainment level

	2012-2013		2013-2014		2014-2015				
INDIRECT ASSESSMENT	Atainment level	AVG. ATTAINMNET	Atainment level	AVG. ATTAINMNET	Atainment level	AVG. ATTAINMNET	COMPETENCY LEVEL		
Placement data - % of students engaed in Professional career (10% WEIGHTAGE)	H	H	H	H	H	H	HIGH (>75%)	MODERATE (60% - 75%)	LOW (<60%)
Higher studies record - % of students persued Higher Studies (5% WEIGHTAGE)	M	H	H	H	H	H	HIGH (>25%)	MODERATE (10% - 25%)	LOW (< 10%)
% of students having valid GPAT/ Competitive Qualifying score (5% WEIGHTAGE)	M	H	H	H	H	H	HIGH (>25%)	MODERATE (10% - 25%)	LOW (< 10%)

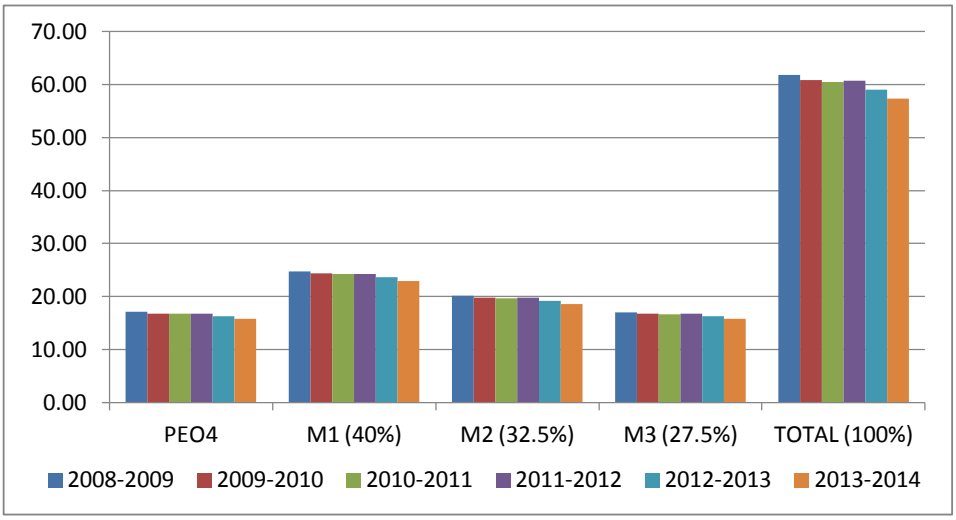
DIRECT ASSESSMENT OF PEO AND MISSION COMPONENTS

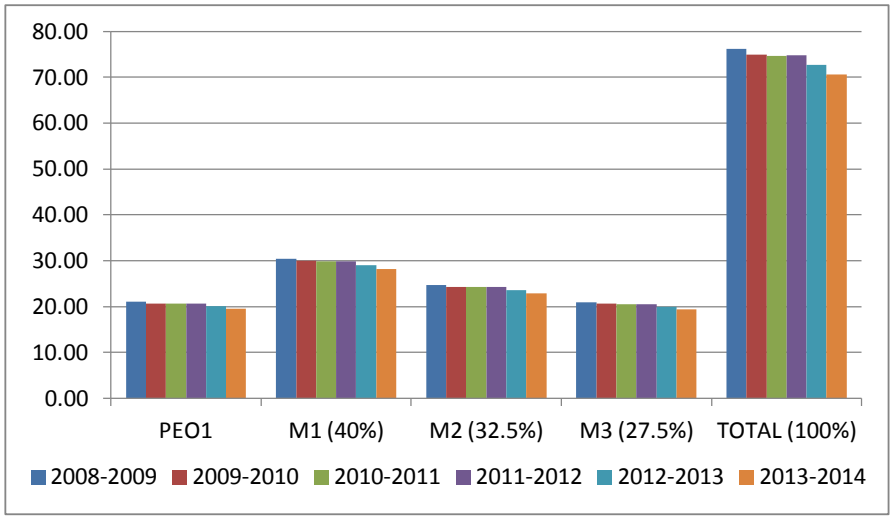
	SEMESTERWISE MEAN SGPA DATA								MEAN SGPA
BATCH	8TH	7TH	6TH	5TH	4TH	3RD	2ND	1ST	
2008-2009	7.82	8.04	7.61	7.45	7.59	7.9	7.3	7.27	7.62
2009-2010	8.03	8.03	7.45	7.05	7.15	7.57	7.03	7.73	7.51
2010-2011	7.91	7.8	7.45	7.38	7.33	7.29	7.08	7.5	7.47
2011-2012	7.82	7.87	7.86	7.31	7.5	7.34	7	7.24	7.49
2012-2013			7.3	7.44	7.43	7.03	7.21	7.29	7.28
2013-2014					7.29	7.02	6.81	7.15	7.07
CONTROL									7.00

% CORRELATION MATRIX	27.6	25.0	25.0	22.4	100.0
BATCH	**PEO1**	**PEO2**	**PEO3**	**PEO4**	**TOTAL**
2008-2009	21.04	19.06	19.06	17.07	76.2
2009-2010	20.71	18.76	18.76	16.81	75.1
2010-2011	20.61	18.67	18.67	16.73	74.7
2011-2012	20.68	18.73	18.73	16.78	74.9
2012-2013	20.10	18.21	18.21	16.31	72.8
2013-2014	19.51	17.67	17.67	15.83	70.7
CONTROL	19.32	17.50	17.50	15.68	70.0



		MISSION COMPONENTS			
BATCH	**PEO1**	**M1 (40%)**	**M2 (32.5%)**	**M3 (27.5%)**	**TOTAL (100%)**
2008-2009	21.04	30.5	24.7	20.9	76.1
2009-2010	20.71	30.0	24.4	20.6	75.0
2010-2011	20.61	29.8	24.2	20.5	74.6
2011-2012	20.68	29.9	24.3	20.6	74.8
2012-2013	20.10	29.1	23.6	20.0	72.8
2013-2014	19.51	28.2	22.9	19.4	70.6
BATCH	**PEO2**	**M1 (40%)**	**M2 (32.5%)**	**M3 (27.5%)**	**TOTAL (100%)**
2008-2009	19.06	30.5	24.8	21.0	76.2
2009-2010	18.76	30.0	24.4	20.6	75.1
2010-2011	18.67	29.9	24.3	20.5	74.7
2011-2012	18.73	30.0	24.4	20.6	74.9
2012-2013	18.21	29.1	23.7	20.0	72.8
2013-2014	17.67	28.3	23.0	19.4	70.7
BATCH	**PEO3**	**M1 (40%)**	**M2 (32.5%)**	**M3 (27.5%)**	**TOTAL (100%)**
2008-2009	19.06	30.5	24.8	21.0	76.2
2009-2010	18.76	30.0	24.4	20.6	75.1
2010-2011	18.67	29.9	24.3	20.5	74.7
2011-2012	18.73	30.0	24.4	20.6	74.9
2012-2013	18.21	29.1	23.7	20.0	72.8
2013-2014	17.67	28.3	23.0	19.4	70.7
BATCH	**PEO4**	**M1 (40%)**	**M2 (32.5%)**	**M3 (27.5%)**	**TOTAL (100%)**
2008-2009	17.07	24.7	20.1	17.0	61.8
2009-2010	16.81	24.3	19.8	16.7	60.8
2010-2011	16.73	24.2	19.7	16.6	60.5
2011-2012	16.78	24.3	19.7	16.7	60.7
2012-2013	16.31	23.6	19.2	16.2	59.0
2013-2014	15.83	22.9	18.6	15.8	57.3

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30.00
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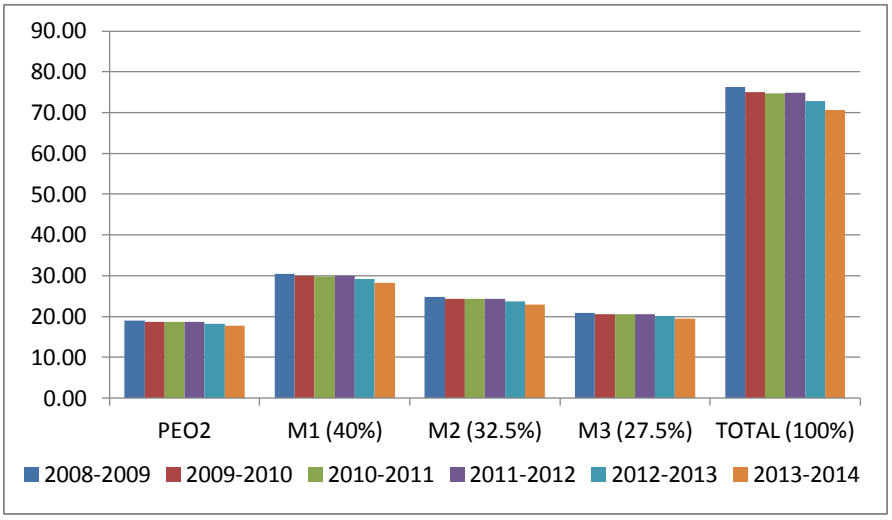
PEO1
M1 (40%)
M2 (32.5%)
M3 (27.5%)
TOTAL (100%)
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014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30.00
20.00
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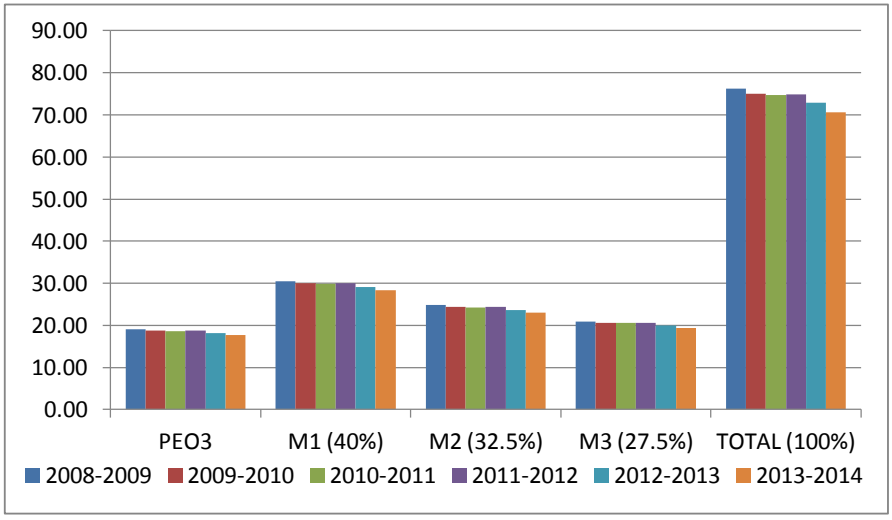
PEO2
M1 (40%)
M2 (32.5%)
M3 (27.5%)
TOTAL (100%)
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014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80.00
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40.00
30.00
20.00
10.00
0.00
PEO3
M1 (40%)
M2 (32.5%)
M3 (27.5%)
TOTAL (100%)
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014

Type of Assessment tool	Assessment tool	Criteria	Data Collection Frequency	Responsible Entity	Mapped PEO	PEO
Direct (70% weightage)	Course performance	% of students Achieved High Competence level (≥7 Grade Pt in 10 Pt scale)	Once in every semester	Maulana Abul Kalam Azad University of Technology, West Bengal	**1,2,3,4**	**PEO 1:** Established themselves as successful professionals in the profession of pharmacy with confidence and global
Indirect (10% weightage)	Placement record	% of students engaed in Professional career	Once in every year	Training & Placement Committee	**1,2,3,4**	**PEO 2** Carried out advanced studies and acquired higher qualifications applying his or her knowledge and experience towards an advanced professional degree.
Indirect (5% weightage)	Higher Studies record	% of students persued Higher Studies (M.Pharm / MBA / M.Tech	Once in every year	Training & Placement Committee	**2, 4**	**PEO 3** Attained capabilities to act as successful team members using effective communications and teamwork skills.
Indirect (5% weightage)	GPAT/ NIPER / MAT / CAT / GRE /TOFEL/ OTHERS Competitive Entrance Exams	% of students having valid GPAT/ Competitive Qualifying score	Once in every year	Academic Committee	**1,4**	**PEO 4:**. Pursued a career for life-long learning with personal & professional growth, proper work ethics and character.
Indirect (10% weightage)	Alumni Feedback	Progress in CAREER ADVANCEMENT	Once After 3,4,5 years of graduation	Training & Placement Committee	**1,3**	

PEO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PEO 1: Established themselves as successful professionals in the profession of pharmacy with confidence and global competitiveness and made intellectual contributions.	H		M	H	H	L		M	H		
PEO 2 Carried out advanced studies and acquired higher qualifications applying his or her knowledge and experience towards an advanced professional degree.	H	M	M						M	H	H
PEO 3 Attained capabilities to act as successful team members using effective communications and teamwork skills.				H	H	H		M	H		
PEO 4:. Pursued a career for life-long learning with personal & professional growth, proper work ethics and character.	M	H	H	M	H	M	L	H	L		H

	PEO 1			PEO 2			PEO 3			PEO 4		
PROGRAMME OUTCOMES	% of students Achieved High Competence level (≥7 Grade Pt in 10 Pt scale)			% of students Achieved High Competence level (≥7 Grade Pt in 10 Pt scale)			% of students Achieved High Competence level (≥7 Grade Pt in 10 Pt scale)			% of students Achieved High Competence level (≥7 Grade Pt in 10 Pt scale)		
	2012-13	2013-14	2014-15	2012-13	2013-14	2014-15	2012-13	2013-14	2014-15	2012-13	2013-14	2014-15
PO 1	61.74	60.67	60.45	61.74	60.67	60.45				61.74	60.67	60.45
PO 2				92.79	91.38	93.74				92.79	91.38	93.74
PO 3	98.33	99.33	88.00	98.33	99.33	88.00				98.33	99.33	88.00
PO 4	96.83	96.80	95.37				96.83	96.80	95.37	96.83	96.80	95.37
PO 5	66.13	68.27	60.40				66.13	68.27	60.40	66.13	68.27	60.40
PO 6	73.47	74.67	70.60				73.47	74.67	70.60	73.47	74.67	70.60
PO 7										79.00	63.50	65.00
PO 8	84.38	82.25	83.63				84.38	82.25	83.63	84.38	82.25	83.63
PO 9	87.38	86.75	80.63	87.38	86.75	80.63	87.38	86.75	80.63	87.38	86.75	80.63
PO 10				73.83	77.57	76.67						
PO 11				73.25	79.00	69.50				73.25	79.00	69.50
Avg.	**81.18**	**81.25**	**77.01**	**81.22**	**82.45**	**78.16**	**81.64**	**81.75**	**78.12**	**81.33**	**80.26**	**76.73**

Atainment level	HIGH (>75%)	MODERATE (60% - 75%)	LOW (<60%)			
	2012-2013		2013-2014		2014-2015	
DIRECT ASSESSMENT	Atainment level	AVG. ATTAINMNET	Atainment level	AVG. ATTAINMNET	Atainment level	AVG. ATTAINMNET
PEO 1	**H**	**H**	**H**	**H**	**H**	**H**
PEO2	**H**	**H**	**H**	**H**	**H**	**H**
PEO 3	**H**	**H**	**H**	**H**	**H**	**H**
PEO 4	**H**	**H**	**H**	**H**	**H**	**H**

ANNEXURE TO PART B-2

ASSESSMENT OF THE ATTAINMENT OF POs

Performance indicators	% Weightage	Assement tool	3 : Completely attained	2 : Attained	1 : Partially attained
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance	At least 75% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale) in Final Umiversity examination	At leasr 60% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale) in Final Umiversity examination	At least 50% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale) in Final Umiversity examination
		Performance in Practical Lab, Project work	At least 75% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale) in Final Umiversity examination	At leasr 60% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale) in Final Umiversity examination	At least 50% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale) in Final Umiversity examination
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	At least 80% of the graduates are working in technical or professional carrers or got enrolled for higher studies	At least 70% of the graduates are working in technical or professional carrers or got enrolled for higher studies	At least 60% of the graduates are working in technical or professional carrers or got enrolled for higher studies
	(5% WEIGHTAGE)	Higher Studies record	At least 30% of the students go for higher studies	At least 20% of the students go for higher studies	less than 10% of the students go for higher studies
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	More than 20% of the students succeed in GPAT / Other competetive exams	At least 10% to 20% of the students succeed in GPAT / Other competetive exams	less than 10% of the students succeed in GPAT / Other competetive exams
	(10% WEIGHTAGE)	Exit survey feedback	Average assessment score of survey report is > 4.0	Average assessment score of survey report is between 3.01 to 3.99	Average assessment score of survey report is < 3.0
	(10% WEIGHTAGE)	Alumni Feedback	Average assessment score of survey report is > 4.0	Average assessment score of survey report is between 3.01 to 3.99	Average assessment score of survey report is < 3.0

Evidences:
- Internal and external exam papers for these courses are available in examination section
- Samples copies of Project are available in the department Library.
- Annual report of the department for co-curricular activities and competitive exams data which was placed in department office.
- Exit survey, Alumni and Employer Survey documents files are available in the department office.

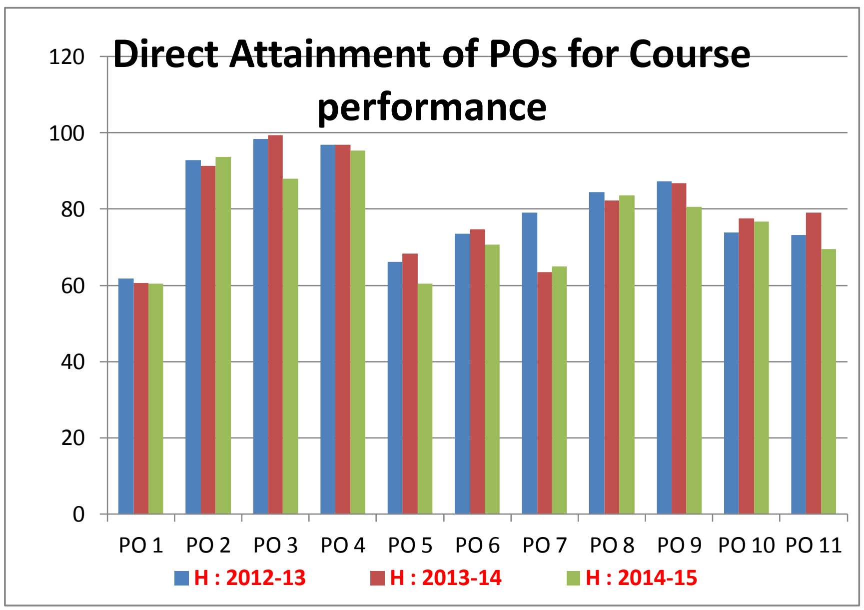
ASSESSMENT OF THE ATTAINMENT OF POs

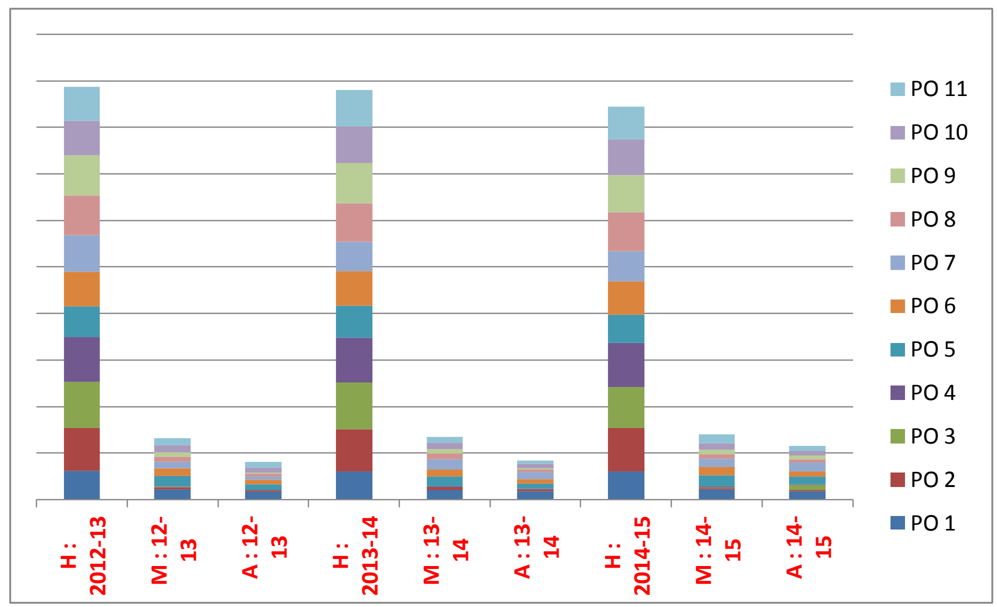
		Atainment level	3 : Completely attained	2 : Attained	1 : Partially attained
Performance indicators	**% Weightage**	**Assement tool**	**AVG. ATAINMENT (2012-2013)**	**AVG. ATAINMENT (2013-2014)**	**AVG. ATAINMENT (2014-2015)**
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance (70%)	2.5	2.6	2.5
		Performance in Practical Lab, Project work (30%)	3	3	3
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	3	3	3
	(5% WEIGHTAGE)	Higher Studies record	2	3	3
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	2	3	3
	(10% WEIGHTAGE)	Exit survey feedback	2	2	2
	(10% WEIGHTAGE)	Alumni Feedback	3	3	3

WEIGHTED AVERAGE METHOD :

Performance indicators	% Weightage	Assement tool	2012-2013	2013-2014	2014-2015
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance Performance in Practical Lab, Project work	1.59	1.632	1.59
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	0.3	0.3	0.3
	(5% WEIGHTAGE)	Higher Studies record	0.1	0.15	0.15
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	0.1	0.15	0.15
	(10% WEIGHTAGE)	Exit survey feedback	0.2	0.2	0.2
	(10% WEIGHTAGE)	Alumni Feedback	0.3	0.3	0.3
		TOTAL ATTAINMENT	3	3	3

	2012-2013			2013-2014			2014-2015		
PROGRAMME OUTCOMES	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale)	% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale)	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale)	% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale)	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale)	% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale)
POs	**H : 2012-13**	**M : 12-13**	**A : 12-13**	**H : 2013-14**	**M : 13-14**	**A : 13-14**	**H : 2014-15**	**M : 14-15**	**A : 14-15**
PO 1	61.74	22.05	16.24	60.67	21.19	18.14	60.45	22.17	18.12
PO 2	92.79	4.32	3.00	91.38	4.74	3.94	93.74	3.29	2.97
PO 3	98.33	1.00	0.67	99.33	0.67	0.00	88.00	1.00	11.00
PO 4	96.83	2.40	0.79	96.80	2.23	1.03	95.37	3.30	1.30
PO 5	66.13	21.20	12.67	68.27	20.40	11.33	60.40	22.73	16.93
PO 6	73.47	17.00	9.53	74.67	16.20	9.13	70.60	18.40	11.07
PO 7	79.00	13.50	7.50	63.50	21.00	15.50	65.00	17.00	18.00
PO 8	84.38	10.50	5.13	82.25	12.13	5.63	83.63	9.38	7.00
PO 9	87.38	9.88	2.75	86.75	9.88	3.38	80.63	10.50	8.75
PO 10	73.83	15.63	10.90	77.57	14.00	8.50	76.67	13.67	9.70
PO 11	73.25	15.44	12.07	79.00	12.81	8.19	69.50	19.63	10.81





DIRECT ASSESSMENT OF COURSE PERFORMANCE IN UNIVERSITY EXAMS:

	2012-2013			2013-2014			2014-2015		
DIRECT ASSESSMENT WEIGHTAGE (60%)	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale)	% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale)	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale)	% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale)	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale)	% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale)
PO 1	61.74	22.05	16.24	60.67	21.19	18.14	60.45	22.17	18.12
PO 2	92.79	4.32	3.00	91.38	4.74	3.94	93.74	3.29	2.97
PO 3	98.33	1.00	0.67	99.33	0.67	0.00	88.00	1.00	11.00
PO 4	96.83	2.40	0.79	96.80	2.23	1.03	95.37	3.30	1.30
PO 5	66.13	21.20	12.67	68.27	20.40	11.33	60.40	22.73	16.93
PO 6	73.47	17.00	9.53	74.67	16.20	9.13	70.60	18.40	11.07
PO 7	79.00	13.50	7.50	63.50	21.00	15.50	65.00	17.00	18.00
PO 8	84.38	10.50	5.13	82.25	12.13	5.63	83.63	9.38	7.00
PO 9	87.38	9.88	2.75	86.75	9.88	3.38	80.63	10.50	8.75
PO 10	73.83	15.63	10.90	77.57	14.00	8.50	76.67	13.67	9.70
PO 11	73.25	15.44	12.07	79.00	12.81	8.19	69.50	19.63	10.81

Atainment level	3 : Completely attained	2 : Attained	1 : Partially attained

	2012-2013		2013-2014		2014-2015	
POs	**Atainment level**	**AVG. ATTAINMNET**	**Atainment level**	**AVG. ATTAINMNET**	**Atainment level**	**AVG. ATTAINMNET**
PO 1	2.00	2.5	2.00	2.6	1.00	2.5
PO 2	3.00		3.00		3.00	
PO 3	3.00		3.00		3.00	
PO 4	3.00		3.00		3.00	
PO 5	2.00		2.00		2.00	
PO 6	2.00		2.00		2.00	
PO 7	3.00		2.00		2.00	
PO 8	3.00		3.00		3.00	
PO 9	3.00		3.00		3.00	
PO 10	2.00		3.00		3.00	
PO 11	2.00		3.00		2.00	

ASSESSMENT OF PRACTICAL LABORATORY & SEMINAR/PROJECT WORK:

	2012-2013			2013-2014			2014-2015		
DIRECT ASSESSMENT WEIGHTAGE (60%)	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale)	% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale)	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale)	% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale)	% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale)	% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale)	% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale)
PO	2012-2013	2012-2013	2012-2013	2013-2014	2013-2014	2013-2014	2014-2015	2014-2015	2014-2015
PO 1	100.00	0.00	0.00	98.00	2.00	0.00	100.00	0.00	0.00
PO 2	97.00	2.37	0.66	97.30	2.30	0.47	97.87	1.67	0.47
PO 3	98.5	1.2	0.3	97.7	2.2	0.2	98.9	0.8	0.2
PO 4	97.07	2.31	0.64	97.17	2.21	0.69	96.24	2.79	0.97
PO 5	--	--	--	--	--	--	--	--	--
PO 6	98.50	0.50	1.00	100.00	0.00	0.00	97.50	2.50	0.00
PO 7	--	--	--	--	--	--	--	--	--
PO 8	99.00	0.33	0.67	99.33	0.67	0.00	99.00	0.33	0.67
PO 9	98.75	0.75	0.50	99.00	1.00	0.00	91.00	0.75	8.25
PO 10	96.86	2.43	0.77	97.36	2.00	0.79	98.14	1.71	0.14
PO 11	97.17	1.83	1.20	97.50	2.50	0.00	97.67	2.33	0.00

Atainment level	3 : Completely attained	2 : Attained	1 : Partially attained

	2012-2013		2013-2014		2014-2015	
POs	**Atainment level**	**AVG. ATTAINMNET**	**Atainment level**	**AVG. ATTAINMNET**	**Atainment level**	**AVG. ATTAINMNET**
PO 1	3.00		3.00		3.00	
PO 2	3.00		3.00		3.00	
PO 3	3.00		3.00		3.00	
PO 4	3.00		3.00		3.00	
PO 5	--		--		--	
PO 6	3.00	**3.0**	3.00	**3.0**	3.00	**3.0**
PO 7	--		--		--	
PO 8	3.00		3.00		3.00	
PO 9	3.00		3.00		3.00	
PO 10	3.00		3.00		3.00	
PO 11	3.00		3.00		3.00	

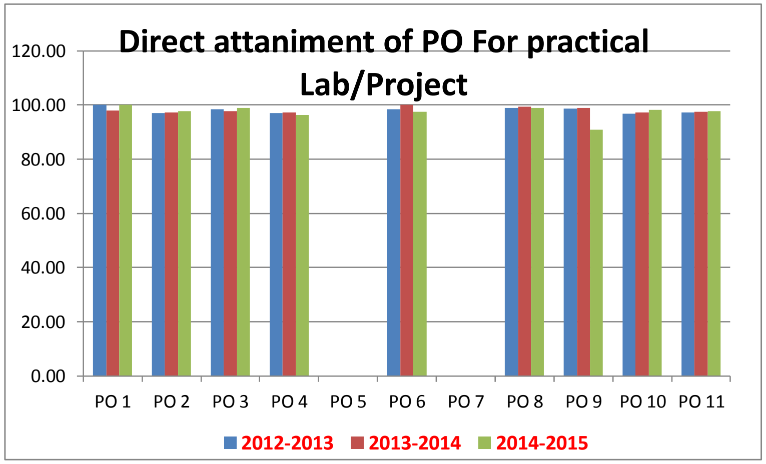


TABLE : 1 INDIRECT ASSESSMENT OF PLACEMENT DATA

YEAR	TOTAL STUDENTS	HIGHER STUDY (%)	MARKETING JOB (%)	INDUSTRY JOB (%)	OHER PROFESSION (%)	ENTERPRENEURSHIP (%)	PLACEMENT INDEX (%)	total	NO OF STUDENTS CLEARED COMPETATIVE	
2008-2009	14	28.6	35.7	28.6	0.0	7.1	71.4	100.0	28.6	4
2009-2010	25	16.0	36.0	8.0	12.0	20.0	76.0	92.0	16.0	4
2010-2011	42	16.7	47.6	23.8	2.4	7.1	81.0	97.6	16.7	7 =GPAT-1, PGET 5, CAT 1
2011-2012	49	40.8	30.6	24.5	4.1	4.1	63.3	100.0	36.7	18 = GPAT-1, PGET - 16, MAT 1
2012-2013	43	23.3	23.3	16.3	7.0	11.6	58.1	81.4	23.3	10 = GPAT – 4, PGET – 3, BITS - 3
2013-2014	54	51.9	7.4	13.0	14.8	1.9	37.0	88.9	51.9	28 = GPAT-12, PGET-11, NIPER-1, BITS-2, GRE-1, BHU-1
2014-2015	72	33.3	33.3	13.9	8.3	0.0	55.6	88.9	33.3	24 = GPAT-3,PGET-15, NIPER-3, BITS-4,BHU-1

TABLE : 2 INDIRECT ASSESSMENT OF GRDUATE EXIT SURVEY

1 – Satisfactory, 2 - Good, 3 – Very Good, 4 - Excellent, 5 – Outstanding.

	MEAN OF EXIT SURVEY FEEDBACK (5 POINT SCALE)											
BATCH	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	**Avg**
CAYm2	3.31	3.24	3.57	3.17	3.35	3.48	3.19	3.43	3.24	3.69	3.04	**3.3**
CAYm1	3.57	3.43	3.69	3.19	3.53	3.74	3.55	3.59	3.43	3.00	3.33	**3.5**
CAY	3.85	3.63	4.05	3.15	3.56	3.76	3.76	3.76	3.61	3.98	3.73	**3.7**

TABLE : 3 INDIRECT ASSESSMENT OF ALUMNI SURVEY

1 – Satisfactory, 2 - Good, 3 – Very Good, 4 - Excellent, 5 – Outstanding.

	MEAN OF ALUMNI FEEDBACK (5 POINT SCALE)											
BATCH	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**Avg**
2012-2013	3.9	4.0	3.8	4.7	3.7	3.5	3.6	3.8	3.9	4.4	4.4	**4.0**
2013-2014	4.1	4.2	4.0	4.3	3.8	3.5	3.5	4.1	4.5	3.9	4.2	**4.0**
2014-2015	3.7	3.9	4.1	4.4	4.0	3.6	4.0	4.2	4.3	4.5	4.0	**4.1**

ASSESSMENT OF THE ATTAINMENT OF POs

Performance indicators	% Weightage	Assement tool	3 : Completely attained	2 : Attained	1 : Partially attained
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance (70%)	At least 75% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale) in Final Umiversity examination	At leasr 60% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale) in Final Umiversity examination	At least 50% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale) in Final Umiversity examination
		Performance in Practical Lab, Project work (30%)	At least 75% of students Achieved High Competence level (>7 Grade Pt in 10 Pt scale) in Final Umiversity examination	At leasr 60% of students Achieved Moderate Competence level (< 7 & >6 Grade Pt in 10 Pt scale) in Final Umiversity examination	At least 50% of students Achieved Avg. Competence level (<6 Grade Pt in 10 Pt scale) in Final Umiversity examination
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	At least 80% of the graduates are working in technical or professional carrers or got enrolled for higher studies	At least 70% of the graduates are working in technical or professional carrers or got enrolled for higher studies	At least 60% of the graduates are working in technical or professional carrers or got enrolled for higher studies
	(5% WEIGHTAGE)	Higher Studies record	At least 30% of the students go for higher studies	At least 20% of the students go for higher studies	less than 10% of the students go for higher studies
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	More than 20% of the students succeed in GPAT / Other competetive exams	At least 10% to 20% of the students succeed in GPAT / Other competetive exams	less than 10% of the students succeed in GPAT / Other competetive exams
	(10% WEIGHTAGE)	Exit survey feedback	Average assessment score of survey report is > 4.0	Average assessment score of survey report is between 3.01 to 3.99	Average assessment score of survey report is < 3.0
	(10% WEIGHTAGE)	Alumni Feedback	Average assessment score of survey report is > 4.0	Average assessment score of survey report is between 3.01 to 3.99	Average assessment score of survey report is < 3.0

Evidences:
- Internal and external exam papers for these courses are available in examination section
- Samples copies of Project are available in the department Library.
- Annual report of the department for co-curricular activities and competitive exams data which was placed in department office.
- Exit survey, Alumni and Employer Survey documents files are available in the department office.

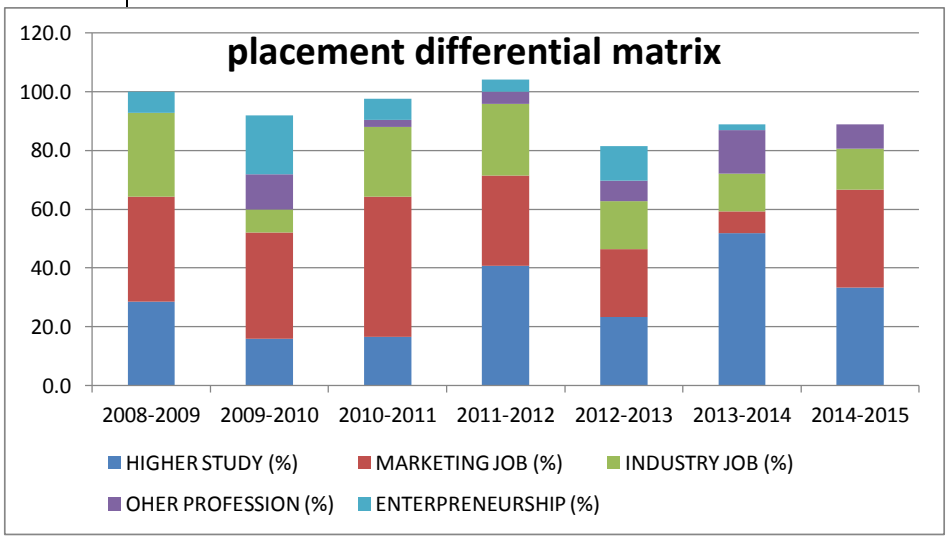
ASSESSMENT OF THE ATTAINMENT OF POs

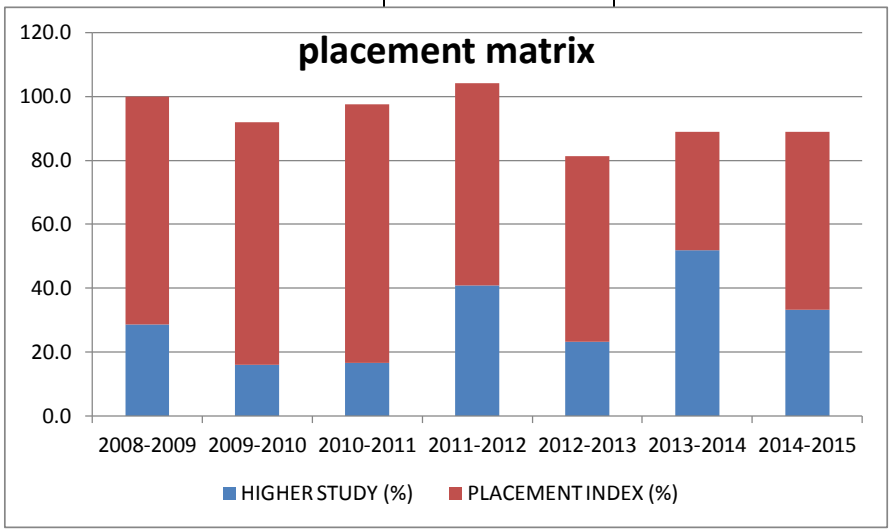
		Atainment level	3 : Completely attained	2 : Attained	1 : Partially attained
Performance indicators	% Weightage	Assement tool	AVG. ATAINMENT (2012-2013)	AVG. ATAINMENT (2013-2014)	AVG. ATAINMENT (2014-2015)
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance (70%)	2.5	2.6	2.5
		Performance in Practical Lab, Project work (30%)	3	3	3
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	3	3	3
	(5% WEIGHTAGE)	Higher Studies record	2	3	3
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	2	3	3
	(10% WEIGHTAGE)	Exit survey feedback	2	2	2
	(10% WEIGHTAGE)	Alumni Feedback	3	3	3

WEIGHTED AVERAGE METHOD :

Performance indicators	% Weightage	Assement tool	2012-2013	2013-2014	2014-2015
DIRECT ASSESSMENT	(60% WEIGHTAGE)	Course performance Performance in Practical Lab, Project work	1.59	1.632	1.59
INDIRECT ASSESSMENT	(10% WEIGHTAGE)	Placement record	0.3	0.3	0.3
	(5% WEIGHTAGE)	Higher Studies record	0.1	0.15	0.15
	(5% WEIGHTAGE)	GPAT/Competitive Exams qulifier	0.1	0.15	0.15
	(10% WEIGHTAGE)	Exit survey feedback	0.2	0.2	0.2
	(10% WEIGHTAGE)	Alumni Feedback	0.3	0.3	0.3
		TOTAL ATTAINMENT	3	3	3

YEAR	HIGHER STUDY (%)	MARKETING JOB (%)	INDUSTRY JOB (%)	OHER PROFESSION (%)	ENTERPRENEURSHIP (%)	PLACEMENT INDEX (%)	GPAT/OTHERS (%)
2008-2009	28.6	35.7	28.6	0.0	7.1	71.4	
2009-2010	16.0	36.0	8.0	12.0	20.0	76.0	
2010-2011	16.7	47.6	23.8	2.4	7.1	81.0	16.7
2011-2012	40.8	30.6	24.5	4.1	4.1	63.3	42.9
2012-2013	23.3	23.3	16.3	7.0	11.6	58.1	23.8
2013-2014	51.9	7.4	13.0	14.8	1.9	37.0	66.7
2014-2015	33.3	33.3	13.9	8.3	0.0	55.6	57.1





Alumni Name:

Present Organisation with designation & address :

Tick the number that best describes your level of satisfaction at each question: ✓

1 – Satisfactory, 2 - Good, 3 – Very Good, 4 - Excellent, 5 – Outstanding.

Sl No.	Criteria	1	2	3	4	5	net
1	Knowledge in multidisciplinary Pharmaceutical & Biomedical subjects & computer application has helped you in your job.				✓		4
2	Hands on training in advanced analytical techniques using modern operating tools has helped to develop precise analytical skill & trouble shooting ability in the present job.					✓	5
3	Scheduling of time bound seminars, project work, and assignments has helped to nurture time & resource management skills required in the job.				✓		4
4	Concept of team work in Lab group experiments and participation in seminars, conferences has been able to generate collective information, sharing of data, motivation to achieve common goal.				✓		4
5	Ability to identify and establish yourself in the unique role as a pharmaceutical technologist/health care professional in the job.			✓			3
6	Ability to generate sense of societal responsibility for patient counseling, awareness about Drug interactions, Health issues			✓			3
7	Ability to apply knowledge towards environmental conservation, pollution control, hazard control & safety measure in relevant job areas.		✓				2
8	An understanding of professional & ethical responsibility and ability to apply in relevant jobs					✓	5
9	The art of writing and verbal communication - using proper technical vocabulary as well as documentation – using proper technical formats, has helped in the job.				✓		4
10	Use of planning and scheduling ability to help in decision making, analysis & interpretation of results and targeted outcome in the job.				✓		4
11	Inculcated advanced professional approaches by reference document citations in lifelong learning process.				✓		4

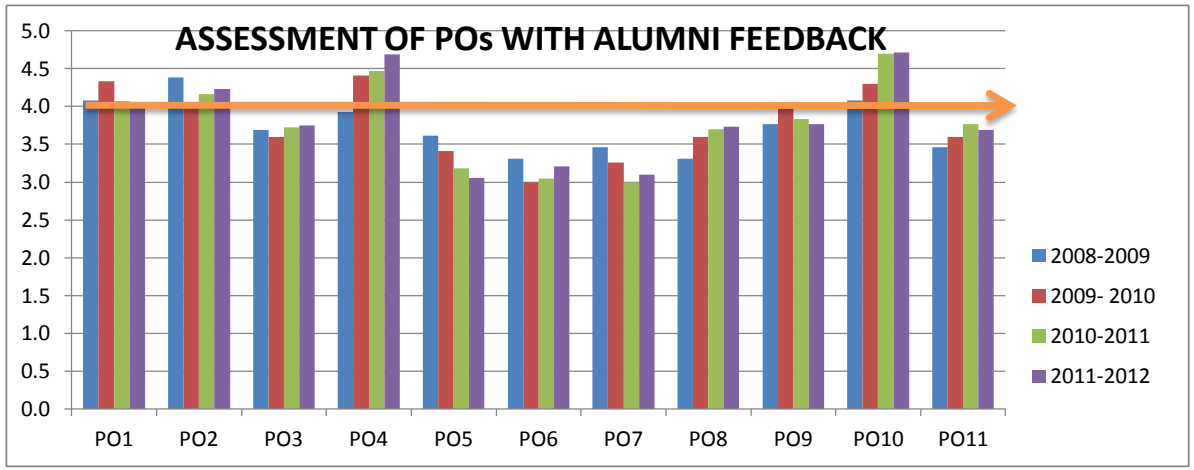
Sl. No.	BATCH 2008-2009	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	
1	Md Asif Ali	4	5	4	4	4	4	4	5	4	4	4	
2	Mr. Rajdeep das	4	5	4	4	4	4	3	3	5	4	3	
3	Mr. Atanu Pattanayak	4	4	3	4	3	3	3	4	4	3	3	
4	Mr. Anirban Gupta	5	5	4	4	4	3	4	3	4	5	3	
5	Mr. Tonmoy Banerjee	3	4	3	3	3	3	3	2	3	3	4	
6	Mr. Varun Kohli	4	5	4	4	4	3	3	4	4	4	4	
7	Ms. Nandita Dasgupta	5	5	4	5	4	4	4	4	5	5	3	
8	Ms. Ranita Bhoumick	3	3	3	4	5	3	3	3	4	3	4	
9	Mr. Manish Das	5	3	4	3	3	3	3	4	3	5	3	
10	Mr. Kumarjit Biswas	5	5	4	4	4	4	4	4	3	5	3	
11	Mr. Indranil Mitra	3	4	3	4	3	2	3	3	4	4	4	
12	Ms. Sumana Majumdar	4	5	4	4	3	4	4	2	3	5	3	
13	Ms. Banashri Das	4	4	4	4	3	3	4	2	3	3	4	
	TOTAL	**53**	**57**	**48**	**51**	**47**	**43**	**45**	**43**	**49**	**53**	**45**	534
	MEAN OF ALUMNI INDEX	**4.1**	**4.4**	**3.7**	**3.9**	**3.6**	**3.3**	**3.5**	**3.3**	**3.8**	**4.1**	**3.5**	

	BATCH 2009- 2010	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	
1	ABHISAK MAZUMDER	4	3	4	5	4	4	3	4	4	5	4	
2	ANIRBAN DAS	5	3	3	4	3	3	4	3	5	4	3	
3	ANUPAM MONDAL	4	4	3	5	4	2	3	4	3	5	4	
4	AYAN KUMAR GIRI	4	4	3	4	3	3	4	3	4	5	3	
5	BINDU GHOSH	4	4	3	5	3	4	3	4	3	4	3	
6	DEBABRATA ACHARYA	4	3	4	4	4	3	3	4	4	4	4	
7	GANESH DEY	4	4	3	4	3	2	3	5	5	4	4	
8	GOURAB GIRI	5	5	4	3	4	4	4	4	4	5	5	
9	JANNATUL HAQUE MANDAL	4	5	3	5	4	3	4	3	3	5	4	
10	MD HARUN AL RASHID	5	5	3	4	5	2	3	4	5	4	3	
11	MIZANUR RAHAMAN MOLLA	4	4	3	5	3	3	4	5	4	4	4	
12	NEHA DASGUPTA	3	4	4	4	2	2	3	4	4	5	4	
13	NILAY BISWAS	5	4	3	5	4	3	3	3	5	3	3	
14	PALLABI MAITY	5	5	3	4	4	3	3	4	4	5	4	
15	PRIYANKA KHUTIA	4	4	5	4	3	4	3	3	3	5	3	
16	RAJU GHOSH	4	4	3	5	2	2	3	3	4	3	4	
17	SAHELI SENGUPTA	5	3	4	4	3	3	4	3	5	5	3	
18	SHRABAN KUMAR PATRA	4	4	3	5	4	4	3	4	4	3	4	
19	SK DILAWAR HUSSAIN	4	5	4	4	3	3	4	4	3	4	3	
20	SOMNATH KUNDU	5	3	5	5	3	2	3	3	4	5	4	
21	SOMOSHREE GHOSH	4	4	5	4	4	3	4	2	5	5	4	
22	SUBHADWIP KAR	5	5	3	5	3	4	4	3	4	3	4	
23	SUBHAMOY GANGULY	4	4	5	4	4	3	3	4	4	5	3	
24	SUBHASHIS BANIK	4	5	3	5	3	3	3	3	3	5	3	
25	SUBHRA CHATTERJEE	5	4	4	4	2	2	2	4	4	3	3	
26	SUMIT MAHAPATRA	4	3	4	5	3	3	3	3	4	5	4	
27	TASLIM AHMED	5	4	3	4	5	4	2	4	5	3	3	
	TOTAL	**117**	**109**	**97**	**119**	**92**	**81**	**88**	**97**	**109**	**116**	**97**	1122
	MEAN OF ALUMNI INDEX	**4.3**	**4.0**	**3.6**	**4.4**	**3.4**	**3.0**	**3.3**	**3.6**	**4.0**	**4.3**	**3.6**	

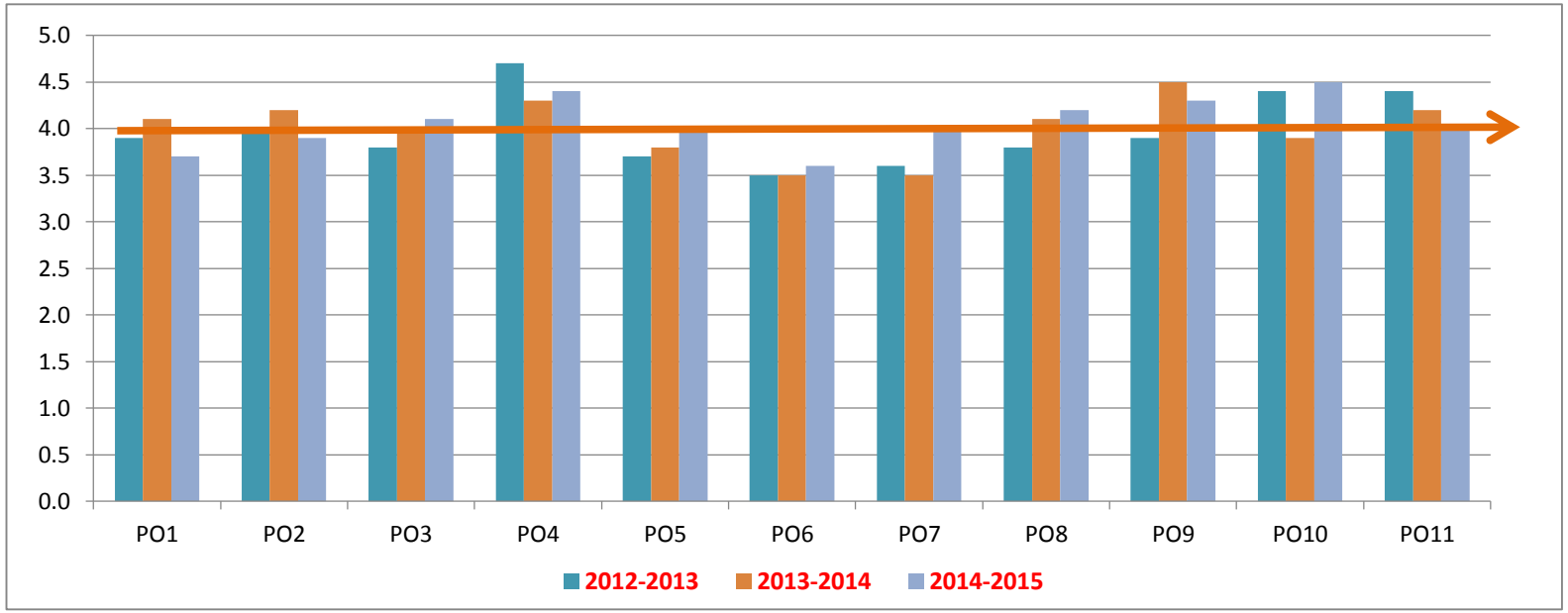
	BATCH 2010-2011	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	
1	ABDUR RAHAMAN	4	4	3	5	4	4	4	5	4	5	4	
2	ABHIRUP DEY	4	4	4	4	3	3	2	3	5	5	3	
3	AMIT KUMAR SINGH	4	4	4	4	3	2	3	4	3	5	4	
4	ANINDYA BANERJEE	3	4	4	5	4	3	2	4	4	4	5	
5	ANIT KUMAR JANA	3	5	4	5	3	3	3	3	3	5	3	
6	ANSUMAN BANERJEE	4	4	4	5	4	4	3	4	3	4	3	
7	APURBA SUNDAR DUTTA	3	4	3	4	2	3	4	3	3	5	4	
8	ATANU PAL	4	4	4	4	3	2	3	5	4	4	4	
9	BAPPADITYA BISWAS	4	3	4	5	2	3	2	4	4	5	5	
10	BIDYUT PODDER	5	3	4	5	2	3	3	4	4	5	4	
11	DEBASISH BASAK	4	3	4	5	4	4	2	4	3	5	4	
12	DEBJANI SEN	3	5	3	4	4	2	3	5	4	5	3	
13	DEBKUMAR JANA	4	5	5	5	2	3	2	3	4	4	4	
14	DIOTIMA PANDA	3	4	4	5	4	4	3	3	5	5	5	
15	DIPANJAN JHA	4	4	4	5	3	3	2	3	5	4	4	
16	KOUSHIK NAYEK	5	5	3	4	3	4	3	4	4	5	3	
17	KOUSTAVAYAN CHOWDHURY	4	5	3	5	4	3	2	3	3	5	3	
18	MANJARI PODDER	3	4	4	3	4	2	3	3	4	5	4	
19	MONOMITA SEN	5	5	4	4	3	3	3	3	3	5	3	
20	NABARUN GHOSH	4	3	4	4	3	3	3	4	3	5	3	
21	PALLAVI MONDAL	4	4	3	5	3	2	4	4	3	4	3	
22	PRADIP JANA	5	4	3	5	3	3	2	4	4	5	4	
23	PRATIK NANDY	5	4	4	5	2	4	3	3	4	5	3	
24	PRIYANKA PANDA	4	5	4	4	3	3	4	4	4	5	3	
25	SANDIPAN PAL	4	5	3	5	3	3	3	3	3	5	4	
26	SANTANU MONDAL	5	3	4	4	3	3	4	4	4	4	3	
27	SAPTHARSI ROY	4	4	4	5	4	4	3	5	4	5	4	
28	SAURYA DIPTA BASU	4	4	4	5	3	4	2	4	5	5	4	
29	SHAILEYEE DAS	5	5	3	3	3	3	4	4	5	4	4	
30	SHANTANU MANDAL	5	4	4	4	4	3	3	3	3	5	4	
31	SHILADITYA HALDAR	4	5	2	4	3	3	3	4	4	4	3	
32	SHOUVIK BHATTACHARYA	4	4	4	5	4	2	4	5	4	5	4	
33	SK AMINUL ISLAM MIA	4	3	3	5	3	3	3	3	4	5	4	
34	SK ANWAR HOSSEN	5	4	4	3	2	2	4	4	3	5	5	
35	SOMA MAJHI	3	5	4	5	5	3	3	4	5	5	4	
36	SOUMYA BANERJEE	5	4	4	4	3	3	4	3	4	5	4	
37	SRIJANI CHATTERJEE	4	4	4	3	5	4	2	4	4	5	4	
38	SUBHASIS BISWAS	4	4	4	5	4	3	3	3	4	4	4	
39	SUBHASISH CHAKRABORTY	5	4	3	5	3	3	3	4	3	4	3	
40	SUKANYA MAJUMDER	4	5	4	5	2	4	3	3	4	4	3	
41	TULSHI CHAKRABORTY	3	4	4	4	3	2	3	4	4	4	5	
42	USHASI DAS	4	5	4	5	2	3	4	3	5	5	4	
43	VIJOY PRATAP TIWARY	4	4	4	4	3	3	3	3	3	5	4	
	TOTAL	**175**	**179**	**160**	**192**	**137**	**131**	**129**	**159**	**165**	**202**	**162**	1791
	MEAN OF ALUMNI INDEX	**4.1**	**4.2**	**3.7**	**4.5**	**3.2**	**3.0**	**3.0**	**3.7**	**3.8**	**4.7**	**3.8**	

	BATCH 2011-2012	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	
1	ADITI PAL	4	3	4	5	3	3	3	4	4	5	4	
2	AKHI BHATTACHARYA	3	4	3	4	3	4	2	5	4	5	3	
3	ANISH GUPTA	4	4	4	5	2	2	3	4	3	5	4	
4	ANKUSH ROY	3	4	4	5	3	3	2	4	4	4	4	
5	ARITRA DUTTA GUPTA	4	4	3	5	3	4	3	3	4	5	3	
6	ARPITA RAHA	4	4	4	5	2	4	4	4	3	4	3	
7	AVEEK DUTTA	3	4	4	5	3	3	3	4	4	5	4	
8	AYAN CHATTERJEE	4	4	3	4	3	2	4	5	4	4	4	
9	BIPLAB DAS	4	4	4	5	2	3	2	4	4	5	4	
10	CHARU JHA	5	5	4	5	3	4	3	4	4	5	4	
11	DEBASMITA SINHA	4	5	4	5	3	3	2	4	3	5	4	
12	DEBODEEP ROY	3	5	3	4	3	2	4	4	4	5	3	
13	DIPNA KARMAKAR	4	5	4	5	3	3	3	3	4	4	4	
14	FIROZ KHAN	3	4	4	4	2	4	3	4	4	5	4	
15	GOURAB DUTTA	4	4	4	5	3	3	2	3	5	4	4	
16	JOYEETA BHATTACHARYA	5	5	4	4	2	4	3	4	4	5	4	
17	JOYSREE MUKHERJEE	4	4	3	5	3	4	4	3	3	5	3	
18	KAUSTAV PRAMANIK	3	4	4	5	3	4	3	3	4	5	4	
19	KAZI JULEKHA	5	5	4	4	4	3	3	3	4	5	3	
20	MD. FIROZ ALAM	4	4	4	5	4	3	4	4	4	5	3	
21	NIRUPAMA GUPTA	4	4	4	5	4	3	2	4	3	4	3	
22	OLY SEN SARMA	4	3	3	5	5	4	3	4	4	5	4	
23	PARTHA PRATIM PANDA	4	4	4	4	3	3	2	4	4	5	4	
24	PERNA BOSE	5	4	4	5	3	4	3	3	4	5	4	
25	POULAMI BANERJEE	4	4	4	4	4	4	3	4	4	5	3	
26	PRACHETA SENGUPTA	4	5	3	5	3	3	4	4	3	5	3	
27	PRITHWISH ROY	5	4	4	4	2	4	2	4	4	4	3	
28	RAJ KUMAR GHOSH	4	4	4	5	4	3	3	5	4	5	4	
29	RAKESH NAYEK	4	4	4	5	3	4	4	4	5	5	4	
30	RANGAN SAHA	4	5	3	5	4	4	3	4	4	4	4	
31	RATANDIP MAITY	5	4	4	4	2	3	4	3	3	5	3	
32	RAVI KUMAR	4	5	4	5	3	4	3	4	4	4	3	
33	RIBHUJEET DAS	4	4	4	4	3	2	4	3	4	5	3	
34	ROSHAN PANDEY	4	4	3	5	4	3	3	3	4	5	4	
35	SAMEN MAJUMDER	4	4	4	4	4	4	4	4	3	5	4	
36	SANTANU SAHA	5	4	4	5	2	2	3	4	3	5	5	
37	SHARMISTHA RAY	4	5	4	5	4	3	3	4	3	5	4	
38	SHURENDRA NATH CHAKRABORTY	5	4	3	5	3	3	3	3	4	5	3	
39	SIRSHENDU DASGUPTA	4	4	4	4	3	2	4	3	4	5	4	
40	SK GOLAM MEHEBUB	4	4	4	5	2	3	3	3	4	4	4	
41	SOUMYADIP SARKAR	4	4	3	5	3	3	3	4	3	4	4	
42	SOUMYAJIT DHAMALI	4	5	4	5	3	3	4	4	4	4	3	
43	SOURAV BHATTA	4	4	4	4	3	2	3	4	4	4	4	
44	SOUVIK CHAKRABORTY	4	5	4	5	4	3	4	3	4	5	4	
45	SREEPARNA DATTA	4	4	3	4	3	4	4	3	3	5	4	
46	SUBHAMOY SENGUPTA	4	5	4	5	2	3	2	3	4	5	5	
47	SUBHANKAR NANDY	4	4	4	5	2	2	4	4	4	4	4	
48	SUBHRAPRAKASH BHAKTA	4	4	4	5	3	3	2	4	3	5	4	
49	SUDIPTA ATA	3	4	4	4	4	4	4	4	4	5	4	
50	SUMIT KUMAR SUTRADHAR	4	4	3	5	3	4	3	3	4	5	3	
51	SUMIT MUKHERJEE	4	5	4	5	4	2	3	4	4	4	4	
52	SUVAJIT DATTA	4	4	4	5	3	4	2	4	3	5	3	
	TOTAL	**209**	**220**	**195**	**244**	**159**	**167**	**161**	**194**	**196**	**245**	**192**	2182
	MEAN OF ALUMNI INDEX	**4.0**	**4.2**	**3.8**	**4.7**	**3.1**	**3.2**	**3.1**	**3.7**	**3.8**	**4.7**	**3.7**	

	MEAN OF ALUMNI FEEDBACK (5 POINT SCALE)										
BATCH	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**
2008-2009	4.1	4.4	3.7	3.9	3.6	3.3	3.5	3.3	3.8	4.1	3.5
2009- 2010	4.3	4.0	3.6	4.4	3.4	3.0	3.3	3.6	4.0	4.3	3.6
2010-2011	4.1	4.2	3.7	4.5	3.2	3.0	3.0	3.7	3.8	4.7	3.8
2011-2012	4.0	4.2	3.8	4.7	3.1	3.2	3.1	3.7	3.8	4.7	3.7



	MEAN OF ALUMNI FEEDBACK (5 POINT SCALE)											
BATCH	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**Avg**
2012-2013	3.9	4.0	3.8	4.7	3.7	3.5	3.6	3.8	3.9	4.4	4.4	**4.0**
2013-2014	4.1	4.2	4.0	4.3	3.8	3.5	3.5	4.1	4.5	3.9	4.2	**4.0**
2014-2015	3.7	3.9	4.1	4.4	4.0	3.6	4.0	4.2	4.3	4.5	4.0	**4.1**



ANNEXURE TO PART B-3

PROPOSED STRUCTURE FOR THEORY & PRACTICAL PAPERS WITH CONTACT HOURS PER WEEK AND CREDIT POINTS FOR BACHELOR IN PHARMACEUTICAL TEHCNOLOGY DEGREE (B. PHARMACY)

SEMISTER-I

A. THEORY							
SL. NO.	**CODE**	**THEORY**	**CONTACTS (PERIODS/WEEK)**				**CREDITS**
			L	**T**	**P**	**TOTAL**	
1	HU 101	HUMANITIES (Professional communication in English)	2	1	-	3	3
2	PT 101	PHARMACEUTICAL ANALYSIS	3	-	-	3	3
3	M 103 OR PTB 101	REMEDIAL MATHEMATICS OR REMEDIAL BIOLOGY	3	-	-	3	3
4	PT 103	PHARMACEUTICAL CHEMISTRY (INORGANIC PHARMACEUTICAL CHEMISTRY)	3	1	-	4	4
5	PT 106	PHARMACEUTICS (DISPENSING PHARMACY)	3	-	-	3	3
Total of Theory						16	16
B. PRACTICAL							
1	PT 191	PHARMACEUTICAL ANALYSIS Lab	-	-	3	3	2
2	PT 196	PHARMACEUTICS (DISPENSING PHARMACY) Lab	-	-	3	3	2
3	PT 193	PHARMACEUTICAL CHEMISTRY Lab	-	-	3	3	2
4	PTB 191	REMEDIAL BIOLOGY Lab*	-	-	3	3	2
Total of Practical						12	8
Total of Semester						28	24

*** Note: PTB 191 is compulsory for all students**

*** Practical examination is essential as per PCI norms :**

i) Sessional : 40

ii) Practical examination : 60

SEMESTER-II

A. THEORY							
Sl. No.	**CODE**	**THEORY**	**CONTACTS (PERIODS/WEEK)**				**CREDITS**
			L	**T**	**P**	**TOTAL**	
1	PT 203	PHARMACEUTICAL CHEMISTRY (PHYSICAL CHEMISTRY)	3	1	-	4	4
2	M 203	ADVANCED MATEHMATICS & ENGINEERING MECHANICS	3	1	-	4	4
3	PT 204	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY)	3	1	-	4	4
4	HU202	ENVIRONMENT & ECOLOGY	3	-	-	3	3
5	PT 202	PHARMACOGNOSY	2	1	-	3	3
6	PT 205	PHYSIOLOGY	2	1	-	3	3
Total of Theory						21	21
B. PRACTICAL							
1	PT 293	PHARMACEUTICAL CHEMISTRY (PHYSICAL CHEMISTRY) Lab	-	-	3	3	2
2	PT 294	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY) Lab	-	-	3	3	2
3	PT 292	PHARMACOGNOSY Lab	-	-	3	3	2
4	PT 295	PHYSIOLOGY Lab	-	-	3	3	2
Total of Practical						12	8
Total of Semester						33	29

SEMESTER-III

A. THEORY							
Sl. No.	**CODE**	**THEORY**	**CONTACTS (PERIODS/WEEK)**				**CREDITS**
			L	**T**	**P**	**TOTAL**	
1	PT 304	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY)	3	1	-	4	4
2	PT 301	PHARMACEUTICAL ANALYSIS	3	1	-	4	4
3	PT 306	PHARMACEUTICS (PHYSICAL PHARMACY)	3	1	-	4	4
4	PT 307	PHARMACEUTICAL ENGINEERING	3	1	-	4	4
5	CS 303	BASIC ELECTRONICS & COMPUTER APPLICATION	3	1	-	4	4
6	PT-305	Anatomy, Physiology & Health Education (APHE)	3	-	-	3	3
Total of Theory						23	23
B. PRACTICAL							
1	PT 394	PHARMACEUTICAL CHEMISTRY (ORGANIC CHEMISTRY) Lab	-	-	3	3	2
2	PT 391	PHARMACEUTICAL ANALYSIS	-	-	3	3	2
3	PT 396	PHAMACEUTICS (PHYSICAL PHARMACY) Lab	-	-	3	3	2
4	PT 397	ENGINEERING DRAWING Lab	-	-	3	3	2
5	CS 393	BASIC ELECTRONICS & COMPUTER APPLICATION Lab	-	-	3	3	2
Total of Practical						15	10
Total of Semester						38	33

SEMESTER-IV

A. THEORY							
Sl. No.	**CODE**	**THEORY**	**CONTACTS (PERIODS/WEEK)**				**CREDITS**
			L	**T**	**P**	**TOTAL**	
1	PT 406	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-I)	3	1	-	4	4
2	PT 402	PHARMACOGNOSY	3	1	-	4	4
3	PT 404	PHARMACEUTICAL CHEMISTRY (BIO-CHEMISTRY)	3	1	-	4	4
4	PT 405	PHYSIOLOGY	3	1	-	4	4
5	PT 407	PHARMACEUTICAL ENGINEERING	3	1	-	4	4
Total of Theory						20	20
B. PRACTICAL							
1	PT 496	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-I) LAB	-	-	3	3	2
2	PT 492	PHARMACOGNOSY Lab	-	-	3	3	2
3	PT 497	PHARMACEUTICAL ENGINEERING LAB	-	-	3	3	2
4	PT 494	PHARMACEUTICAL CHEMISTRY (BIO-CHEMISTRY) LAB	-	-	3	3	2
Total of Practical						12	8
Total of Semester						32	28

SEMESTER-V

A. THEORY							
Sl. No.	**CODE**	**THEORY**	**CONTACTS (PERIODS/WEEK)**				**CREDITS**
			L	**T**	**P**	**TOTAL**	
1	PT 506	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-II)	3	1	-	4	4
2	PT 508	PHARMACOLOGY	3	-	-	3	3
3	PT 509	PHARMACEUTICAL MICRO-BIOLOGY	3	-	-	3	3
4	PT 503	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY)	3	1	-	4	4
5	PT 507	PHARMACEUTICAL ENGINEERING	3	-	-	3	3
6.	PT 504	PHARMACEUTICAL CHEMISTRY (BIO-CHEMISTRY)	3	-	-	3	3
Total of Theory						20	20
B. PRACTICAL							
1	PT 596	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY-II) LAB	-	-	3	3	2
2	PT 597	PHARMACEUTICAL ENGINEERING LAB	-	-	3	3	2
3	PT 599	PHARMACEUTICAL MICRO-BIOLOGY LAB	-	-	3	3	2
4	PT 593	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY) LAB	-	-	3	3	2
Total of Practical						12	08
Total of Semester						32	28

SEMESTER-VI

A. THEORY							
Sl. No.	**CODE**	**THEORY**	**CONTACTS (PERIODS/WEEK)**				**CREDITS**
			L	**T**	**P**	**TOTAL**	
1	PT 603	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY)	3	1	-	4	4
2	PT 606	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY)	3	-	-	3	3
3	PT 611	PHARMACEUTICS (BIO-PHARMACEUTICS & PHARMACOKINETICS)	3	1	-	4	4
4	PT 608	PHARMACOLOGY	3	-	-	3	3
5	PT 609	PHARMACEUTICAL BIO-TECHNOLOGY & INDUSTRIAL MICRO-BIOLOGY	3	-	-	3	3
6.	PT 610A/B	ELECTIVE-I	3	-	-	3	3
Total of Theory						20	20
B. PRACTICAL							
1	PT 693	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY) LAB	-	-	3	3	2
2	PT 696	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY) LAB	-	-	3	3	2
3	PT 697	PHARMACUTICS (BIO-PHARMACEUTICS & PHARMACOKINETICS) LAB	--	-	3	3	2
4	PT 698	PHARMACOLOGY LAB	-	-	3	3	2
5	PT 691A/B	ELECTIVE-I					
Total of Practical						12	8
C. SESSIONALS							
Seminar (PT 682)			3			2	
Total of Semester			35			30	

Elective-I

PT610A/691A: Computer application in Pharmaceutical Technology and in Clinical Pharmacy.

PT610B/691B: Advanced Pharmaceutical Biotechnology.

SEMESTER-VII

A. THEORY							
Sl. No.	**CODE**	**THEORY**	**CONTACTS (PERIODS/WEEK)**				**CREDITS**
			L	**T**	**P**	**TOTAL**	
1	PT 706	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY)	3	-	-	3	3
2	PT 703	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY)	3	-	-	3	3
3	PT 702	PHARMACOGNOSY	3	-	-	3	3
4	PT 708	PHARMACOLOGY	3	-	-	3	3
5	PT 709A/B/C	ELECTIVE-II	3	-	-	3	3
Total of Theory						15	15
B. PRACTICAL							
1	PT 796	PHARMACEUTICS (PHARMACEUTICAL TECHNOLOGY) LAB	-	-	3	3	2
2	PT 793	PHARMACEUTICAL CHEMISTRY (MEDICINAL CHEMISTRY) LAB	-	-	3	3	2
3	PT 783	PROJECT	-	-	8	8	6
Total of Practical						14	10
C. SESSIONALS							
1	Seminar on assigned topic (PT 782)		3			2	
	Total of sessionals		3			2	
Total of Semester			32			27	

Elective-

PT709A: Packaging Technology

PT709B: Advanced Pharmacognosy.

PT709C: Pharmaceutical Marketing Management.

SEMESTER-VIII

A. THEORY							
Sl. No.	**CODE**	**THEORY**	**CONTACTS (PERIODS/WEEK)**				**CREDITS**
			L	**T**	**P**	**TOTAL**	
1	PT 812	PHARMACEUTICAL INDUSTRIAL MANAGEMENT	3	-	-	3	3
2	PT 813	PHARMACEUTICAL JURISPRUDENCE & ETHICS	3	-	-	3	3
3	PT 818	HOSPITAL PHARMACY & CLINICAL PHARMACY	3	-	-	3	3
4	PT 801	PHARMACEUTICAL ANALYSIS	3	-	-	3	3
Total of Theory						12	12
B. PRACTICAL							
1	PT 891	PHARMACEUTICAL ANALYSIS	-	-	3	3	2
			-	-	-	-	-
Total of Practical						03	02
C.Sessional							
1	PT 884	VIVA-VOCE	-	-	-	06	06
			-	-			
Total of Sessional						06	06
Total of Semester						**21**	**20**

PRECIES OF TOTAL GRADES IN B. PHARMACY PROGRAMME

SEMESTER	MINIMUM	MAXIMUM
SEM I		24
SEM II		29
SEM III		33
SEM IV		28
SEM V		28
SEM VI		30
SEM VII		27
SEM VIII		20
TOTAL CREDIT		**219**

NOTE: PHARMACEUTICAL TECHNOLOGY IS A MULTI-DISCIPLINARY SUBJECT THAT'S WHY THE STRUCTURE GIVEN BY THE WEST BENGAL UNIVERSITY OF TECHNOLOGY HAS BEEN DEVIATED IN SOME POINTS. THE TOTAL COURSE HAS BEEN DESIGNED ON THE BASIS OF AICTE & JADAVPUR UNIVERSITY, BIT, MESRA & PILANI COURSE STRUCTURE. THIS IS TO BE CONSIDERED AT THE TIME OF FINALISATION OF THE CURRICULUM.

SYLLABUS FOR B. PHARMACY

SEMESTER-I

PROFESSIONAL COMMUNICATION IN ENGLISH

Code : HU 101
Contact : 2L + I T = 3
Credits: 3

Guidelines for Course Execution

Objective of the Course

To impart basic skills of communication in English through intensive practice to the first year UG students of Engineering so as to enable them to function confidently and effectively in that language in the professional sphere of their life.

Desired Entry Behaviour

The student must have some basic command of English that is must be able to :

1. write reasonably grammatically
2. understand (if not use) at least some 2500 general purpose words of English to express himself in writing and 1500 words to talk about day-to-day events and experiences of life.
3. understand slowly-delivered spoken material in Standard Indian English , and
4. speak reasonably clearly (if not fluently) on routine matters with his fellow students.

Strategies for Course Execution

- The topics must be conveyed through plenty of examples. Lecture classes must be conducted as lecture-cum-tutorial classes.
- It is a course that aims to develop skills. It is therefore "practical" in orientation. Plenty of exercises of various kinds must be done by the students both inside and outside the classroom.
- The teacher must not depend on a single or a set of two or three text books. He must choose his materials from diverse sources.
- Keeping in view the requirements of his students , the teacher may have to prepare some teaching and exercise material.
- For practice in listening , good tape recorders can be used if the more advanced facilities (for example , language laboratory) are not available. In fact they can be used very fruitfully.
- The teacher must function as a creative monitor in the class-room.
- Minimum time should be spent in teaching phonetic symbols , stress , intonation , etc. The aim should be to enable the students to find out for himself the correct pronunciation of a word from a learner's dictionary. In teaching speaking, emphasis should be on clarity , intelligibility and reasonable fluency

rather than on " correct " pronunciation of words. Classroom presentation and group discussion sessions should be used to teach speaking.

End Results from the Course

Some Key Concepts

Communication as sharing; context of communication; the speaker / writer and the listener / reader; medium of communication; barriers to communication; brevity, clarity and appropriateness in communication.

Writing

Selecting material for expository, descriptive , and argumentative pieces, business letters; formal report; summarizing and abstracting ; expressing ideas within a restricted word limit; paragraph division; the introduction and the conclusion; listing reference material; use of charts, graphs and tables ; punctuation and spelling; semantics of connectives, modifiers and modals; variety in sentences and paragraphs.

Reading Comprehension

Reading at various speeds (slow , fast , very fast) ; reading different kinds of texts for different purposes (for example , for relaxation , for information , for discussion at a later stage , etc.) ; reading between the lines.

Speaking

Achieving desired clarity and fluency ; manipulating paralinguistic features of speaking (voice quality , pitch , tone , etc.) pausing for effectiveness while speaking ; task-oriented , interpersonal , informal and semiformal speaking ; task-oriented, interpersonal , informal and semiformal speaking; making a short , classroom presentation.

Group Discussion

Use of persuasive strategies including some rhetorical devices (for emphasizing , for instance; being polite and firm; handling questions and taking in criticism of self; turn-taking strategies and effective intervention ; use of body language.

Telephonic Conversation.

Listening Comprehension

Achieving ability to comprehend material delivered at relatively fast speed; comprehending spoken material in Standard Indian English, British English and American English ; intelligent listening in institutions such as an interview in which one is a candidate.

Syllabus Details:

Grammar – Structure of sentences – Active / Passive Voice – Direct / Indirect Narration
(5 lectures)

Essay – Descriptive – Comparative – Argumentative – Thesis statement- Structure of opening / concluding paragraphs – Body of the essay
(7 lectures)

Reading Comprehension – Global – Contextual – Inferential – Select passages from recommended text
(8 lectures)

Business Correspondence – Letter Writing – Formal. Drafting. Biodata- Resume′- Curriculum Vitae
(7 lectures)

Report Writing – Structure , Types of report – Practice Writing
(8 lectures)

Communication / Public Speaking skills , Features of effective speech, verbal-nonverbal
(7 lectures)

Group discussion – principle – practice
(6 lectures)

References / Books:

1. Mark MaCormack : "Communication"
2. John Metchell " How to write reports"
3. S R Inthira & V Saraswathi " Enrich your English – a) Communication skills b) Academic skills " Publisher CIEFL & OUP
4. R.C. Sharma and K.Mohan , "Business Correspondence and Report Writing " , Tata McGraw Hill , New Delhi , 1994
5. L.Gartside , "Model Business Letters" , Pitman , London , 1992
6. Longman , "Longman Dictionary of Contemporary English" (or 'Oxford Advanced Learner's Dictionary of Current English' , OUP , 1998.
7. Maxwell Nurnberg and Rosenblum Morris , "All About Words" , General Book Depot, New Delhi , 1995

Code : **PT 101**
Contacts: **3**
Credits : **3**

Pharmaceutical Analysis

1. Significance of quantitative analysis in quality control, Different techniques of analysis, Preliminaries and definitions, Significant figures, Rules for retaining significant digits, Types of errors, Mean deviation, Standard deviation, Statistical treatment of small data sets, Selection of sample, Precision and accuracy, Fundamentals of volumetric analysis, methods of expressing concentration, primary and secondary standards.
2. **Acid Base Titrations** : Acid base concept, Selection of solvents, strengths of acids and bases, Ionization, Law of mass action, Common Ion effect, Ionic product of water, pH, Hydrolysis of salts, Henderson-Hesselbach equation, Buffer solutions, Neutralization curves, Acid-base indicators. Theory of indicators, Choice of indicators, Mixed indicators, Polyprotic system, Polyamine and amino acid systems,
3. **Precipitation Titrations** : Precipitation reactions, Solubility products, Effect of acids, temperature and solvent upon the solubility of a precipitate, Argentometric titrations and titrations involving ammonium or potassium thiocyanate, mercuric nitrate, and barium sulphate, Indicators, Gay-Lussac method, Mohr's method, Volhard's method and Fajan's method.

4. **Oxidation Reduction Titration**: Concepts of oxidation and reduction, Redox reactions, Strengths and equivalent weights of oxidising and reducing agents. Theory of redox titration, Redox indicators, Cell representations, Measurement of electrode potential, oxidation-reduction curves, Iodometry and Iodimetric Titrations involving ceric sulphate, potassium iodate, potassium bromate, potassium permanganate

5. **Gravimetric analysis**: Precipitation techniques, Solubility products, The colloidal state, supersaturation co-precipitation, Post-precipitation, Washing of the precipitate, Filteration, Filter papers and crucibles,Ignition, Thermogravimetric curves, Specific examples like barium sulphate, aluminium as aluminium oxide, calcium as calcium oxalate and magnesium as magnesium sulphate.

Practical

Code: **PT 191**
Contacts: **3**
Credits: **2**

The students should be introduced to the main analytical tools through demonstrations. They should have a clear understanding of a typical analytical balance, the requirements of a good balance, weights, care and use of balance, methods of weighing and errors in weighing. The students should also be acquainted with the general apparatus required in various analytical procedures.

1. Standardization of analytical weights and calibration of volumetric apparatus.

2. Acid base Titration: Preparation and standardization of acids and bases, some exercises related with determination of acids and bases separately or in mixture form , some official assay procedures e.g. boric acid should also be covered.

3. Oxidation Reduction Titrations: Preparation and standardization of some redox titrants e.g. potassium permanganate, potassium dichromate, iodine, sodium thiosulphate, etc. some exercises related to determination of oxidizing and reducing agents in the sample shall be covered.

4. Precipitation titrations: Preparation and standardization of titrants like silver nitrate and ammonium thiocyanate, Titrations according to Volhard's and Fajan's method.

5. Gravimetric analysis: One exercise related to gravimetric analysis is to be covered.

Remedial Mathematics

Theory

Code: **M 103**
Contacts: **3L + IT**
Credits: 3

1. **Algebra**: Determinants of order 2,3, properties, simple problems, solution of simultaneous equations by Cramer's rule, matrices, special types of matrices, arithmetic operations on matrices, inverse of a matrix, solution of simultaneous equations by matrices, inversion method, pharmaceutical applications of determinants and matrices.

2. **Calculus**:

   Differential: Limits, continuity of functions of a single variable derivatives, successive derivatives, Leibnitz theorem (statement only) simple problems, Lagrange's Mean Value Theorem, simple problems, evaluation of limits by L' Hospital's rule (Indeterminate form)

Partial differentiation for functions of two variables, Eculer's theorem on homogeneous functions of two variables (statement, no proof) Maxima and minima for functions of a single variable, simple problems.

3. **Calculus :**
Integral: Indefinite integrals of standard forms, integration by parts, method of substitution, partial fractions, formal evaluation of definite integrals.

4. **Differential Equations**: Definition and formation of differential equations, order and degree, equations of first order and first degree, variable separable, homogeneous, exact and linear differential equations and equations reducible to such types, linear differential equations of order greater than one with constant coefficients, complementary function and particular integral, pharmaceutical applications.

OR

Remedial Biology

Theory

Code: **PTB 101**
Contacts: **3**
Credits: **3**

1. General idea about classification of plants, rules of priority, ICBN, brief idea about natural sexual and phyllogenetic system and classification, their merits & demerits. binomial nomenclature, taxa and taxon
2. **Plant Cell :** It's structure and non-living inclusions, mitosis and meiosis, different types of plant tissues and their structure, location and function.
3. Morphology and histology of root, stem, bark, wood, leaf, inflorescence flower, fruit and seed, Modification of root and stem.
4. General Survey of animal kingdom, Structure and life history & pathogenecity of parasites as illustrated by amoeba, entamoeba, trypanosoma, plasmodium, taenia, ascaris, schistosom, oxyuris, and ancylostoma.
5. General Structure and life history of insects like mosquito, housefly, mites (sarcoptes scabies) and silkworm.

Practical

Code: **PTB 191**
Contacts: **3**
Credits: **2**

1. Morphology of plant parts indicated in theory.
2. Care, use and type of microscopes.
3. Gross identification of slides of structure and life cycle of lower plants, animals mentioned in theory.
4. Morphology of plant parts indicated in theory.
5. Preparation, microscopic examination of stem, root and leaf of monocot and dicot plants.
6. Dissection of toads and identification of different organs.

Pharmaceutical Chemistry
(Inorganic Pharmaceutical Chemistry)

Theory

Code: PT 103
Contacts: 3L + 1T
Credits: 4

An outline of methods of preparation, uses, sources of impurities, tests for purity and identity, including limit tests for iron, arsenic, lead, heavy metals, chloride, sulphate and special tests if any, of the following classes of inorganic pharmaceuticals included in **Indian Pharmacopoeia.**

1. **Acids and Bases: Buffers :**, Arrhenius concept, Lewis concept, Bronsted Lowry concept, pH, pOH, Buffer solutions, buffer capacity, physiological buffer, selection of buffer solution and role of buffer in pharmacy, Water (Types, quality, purification and preservation)
2. Gastrointestinal Agents: Acidifying agents (dilute hydrochloric acid), Antacids [definition, characteristics, drug interaction, compounds including aluminium hydroxide gel, dried aluminium hydroxide gel, calcium carbonate, magnesium carbonate (light & heavy), milk of magnesia, magnesium trisilicate and sodium bi-carbonate injection] Protectives and Adsorbents (mismatch sub-carbonate and bismath subgalate), Cathartics (definition and Mechanism of action of cathartics, laxatives and purgatives, Magnesium sulphate and disodium hydrogen phosphate)
3. Major Intra-and Extra-cellular electrolytes: Physiological ions, Electrolytes used for replacement therapy, acid-base balance and combination therapy.
4. Essential and Trace Elements: Transition elements and their compounds of pharmaceutical importance: Iron and haematinics, mineral supplements.
5. Cationic and anionic components of inorganic drugs useful for systemic effects.
6. Inorganic Radio pharmaceuticals: Nuclear radio pharmaceuticals. clinical applications and dosage, hazards and precautions.
7. Topical Agents: Protectives (silicon polymers, activated dimethicone, calamine & calamine lotion, zinc oxide) , Astringents and Anti-infectives(Hydrogen peroxide, potassium permanganate, chlorinated lime, iodine solutions, sublime sulphur)
8. Dental Products: Dentifices, Anti-caries agents
9. Complexing and chelating agents used in therapy
10. Miscellaneous Agents: Definition and representative example of Sclerosing agents, expectorants, emetics, poisons and antidotes, sedatives etc. Pharmaceutical Aids used in Pharmaceutical Industry. Anti-oxidants, preservatives, filter aids, adsorbents, diluents, excipients, suspending agents, colorants etc.

Practicals

Code: PT 193
Contacts: 3
Credits: 2

The background and systematic qualitative analysis of inorganic mixtures of upto four radicals, Six Mixtures to be analysed, preferably by semi-micro methods, identification tests for pharmaceutical/inorganic pharmaceuticals and qualitative tests for cations and anions should be covered.

Pharmaceutics
(Dispensing and Community Pharmacy)

Theory

Code: **PT 106**
Contacts: **2L + 1T = 3**
Credits: 3

1. Introduction to pharmacopoeia and different types of pharmaceutical formulations (definition).
2. **Prescription :** Handling of prescription, source of errors in prescription, care required in dispensing procedures including labelling of dispensed products.
3. General dispensing procedures including labelling of dispensing products.
4. **Pharmaceutical calculations** : Posology, calculation of doses for infants, adults and elderly patients; calculation involving percentage solution, allegation method, alcohol dilution, proof spirit, isotonicity adjustment.
5. **Principles involved and procedures adopted in dispensing of :** Typical prescriptions like solution, emulsions, ointments, powders, pills, tablet triturates etc.
6. **Incompatibilities :** Physical, chemical and therapeutic incompatibilities. Correction of incompatibilities.
7. **Community Pharmacy :** Organisation and structure of retail and whole sale drug store-types of drug store and design, legal requirement for establishment, maintenance and drug store-dispensing of proprietary products, maintenance of records of retail and wholesale, patient counselling, role of pharmacist in community health care and education.

Practical

Code: **PT 196**
Contacts: **3**
Credits: 2

1. **Dispensing of prescription falling under the categories** : Mixture, solutions, emulsions, ointments, powders, suppositories, opthalmics, paste, paints, tablet titurates, lotions, liniments, etc.
2. Identification of various types of incompatibilities in prescription, correction thereof and dispensing of such prescriptions.

SEMESTER -II

Pharmaceutical Chemistry
(Physical Chemistry)

Theory

Code: **PT 203**
Contacts: **3L + 1T**
Credits: 4

1st Half

1. **Behaviour of Gases**: Kinetic theory of gases, deviation from ideal behaviours and explanation.
2. **The Liquid State**: Physical properties (surface tension, parachor, viscosity, refractive index, optical rotation, dipole moments and chemical constituents).
3. **Solutions**: Ideal and real solutions, solutions of gases in liquids, colligative properties, partition coefficient, conductance and its measurement, Debye Huckel theory.
4. Colloids
5. Acids, bases and salts, pH, pka, buffers and buffering action.

6. **Thermodynamics**: First law of thermodynamics : Energy, Work, Heat, Enthalpy, Thermochemistry.

   Second law of Thermodynamics : Entropy, Free Energy Net Work, deduction of important equations Clausius-calpeyron equation Helomrholtz equation, Vant Hoff equation.

   Phase equilibria and phase rule.

7. **Adsorption :** Freudlich and Gibbs adsorption isotherms, Langmuir theory of adsorption.
8. **Chemical Kinetics:** Molecularity and order of reaction, Zero, first and second order reactions, complex reactions, theories of reaction kinetics, Arrhenius equation, characteristics of homogeneous and heterogeneous catalysis, acid-base and enzyme catalysis.
9. Electrochemistry: electrolyte and non-electrolytes

Practical

Code: **PT 293**
Contacts: **3**
Credits: 2

1. To determine the refractive index of given liquids
2. To determine the specific rotation of sucrose at various concentration and determine the intrinsic rotation.
3. To determine the rate constant of simple reaction
4. Determination of partition co-efficient of drugs
5. Experiments on adsorption and colorimetry
6. Determination of transition temperature of a salt.
7. Determination of adsorption coefficient.
8. Determination of surface tension and viscosity of liquids
9. Determination of acid-base, dissociation constant by pH meter

Advanced Mathematics & Engineering Mechanics

Theory

Code: **M 203**
Contacts: **3L + 1T**
Credits: 4

1. **Biometrics :** Exact and approximate numbers, significant digits and rounding off numbers, data collection, data organisation, diagramatic representation of data, bar, pie, 2-D and 3-D diagrams, simple measures of central tendency, mean, median, mode, simple measure of dispersion, standard Deviation and standard error of means, coefficient of variation, concept of probability, classical and frequency definition of probability, conditional and compound probability, independence of events, total, addition and multiplication theorems of probability (no proof required), simple problems of probability, Bayes Theorem (statement) and application, elements of Binomial and Poisson distributions, Normal distribution curve and properties, Kurtosis and skewness, correlation and regression lines, linear curve fitting by the method of least squares, confidence (fiducial) limits, statistical reference, Student's and paired t-test and F-test, applications of statistical concepts in Pharmaceutical Sciences.

2. **Laplace Transforms :** Definition, transforms of elementary functions, properties of linearity and shifting, inverse Laplace transforms, transforms of derivatives, solution of ordinary simultaneous differential equations (in two variables).

3. **Engineering Mechanics :** Composition and resolution of forces, equilibrium of concurrent forces, Polygon of forces, Friction, Sliding friction (simple problems) Centre of gravity arc, area, volume (use of calculus) simple problems, Motion under gravity, work, power, energy, conservation of Energy.

Pharmaceutical Chemistry
(Organic Chemistry)

Theory

Code: PT 204
Contacts: 3L + 1T
Credits: 4

The subject of organic chemistry will be treated in its modern perspective keeping for the sake of conveniences, the usual classification of organic compounds :

1. **Structure and Properties** : Atomic structure, Atomic orbitals. Molecular orbital theory, Molecular orbitals, Bonding and Anbtibonding orbitals, Covalent bond, Hybrid orbitals, Intramolecular forces, Bond dissociation energy, Polarity of bonds, Polarity of molecules, structure and physical properties, Intermolecular forces.

2. **Structure, Nomenclature, Preparation and Reactions of** Alkanes, Alkenes, Alkynes, Cycloalknes, Dienes, alkyl halides.

3. **Stereochemistry**: Isomerism and nomenclature and associated physicochemical properties, optical activity, stereoisomerism, specification of configuration, Reactions involving stereoisomers, chirality, chiral reagents conformations.
4. **Structure, Nomenclature, Preparation and Reactions of**: Alcohols, Ethers, Epoxides, Amines, Aldehydes and ketones, Carboxylic acids.
5. Concept of Aromaticity

Practicals

Code: PT 294
Contacts: 3
Credits: 2

1. The students should be introduced to the various laboratory techniques, through demonstrations involving synthesis of selected organic compounds (e.g. aspirin, p-bromoacetanilide, reduction of nitrobenzene etc.)
2. Identification of organic compounds and their derivatisation.
3. Introduction to the use of stereomodels.

ENVIRONMENT AND ECOLOGY

Code: HU 202
Contacts: 3L + 1 T = 4
Credits: 3

General

Introduction , components of the environment, environmental degradation

Ecology

Elements of Ecology ; Ecological balance and consequences of change, principles of environmental impact assessment

Air Pollution and Control

Atmospheric composition, energy balance, climate, weather , dispersion, sources and effects of pollutants , primary and secondary pollutants, green house effect, depletion of ozone layer, standards and control measures.

Noxious gases and vapours (CO, Benzene, Gasoline, Kerosene)

Water Pollution and Control

Hydrosphere, natural water, pollutants : their origin and effects , river / lake / ground water pollution, standards and control (Specifically arsenic, lead & mercury).

Land Pollution

Lithosphere , pollutants (municipal, industrial, commercial, agricultural, hazardous solid wastes) ; their origin and effects, collection and disposal of solid waste, recovery and conversion methods.

Noise Pollution

Sources, effects, standards and control.

References / Books:

1. Masters, G.M., "Introduction to Environmental Engineering and Science", Prentice –Hall of India Pvt. Ltd. , 1991
2. Nebel , B.J., "Environmental Science", Prentice –Hall Inc., 1987
3. Odum , E.P., "Ecology: The Link between the natural and social sciences" , IBH Publishing Com. , Delhi

1. Definition, history and scope of pharmacognosy including indigenous system of medicine.
2. Various system of classification of drugs of natural origin.
3. Adulteration and drug evaluation; significance of pharmacopoeial standards and different types of Extrinsic & Intrinsic factor.
4. Occurrence, distribution, organoleptic evaluation, microscopical evaluation, chemical constituents including tests wherever applicable and therapeutic efficacy of following categories of drugs.
   a) Laxatives: Aloes, Rhuburb, Castor oil, Ispaghula, Senna
   b) Cardiotonics – Digitalis,
   c) Carminatives & G.I. regulators – Coriander, Fennel, Ajowan, Cardamom, Black pepper, Nutmeg, Cinnamon, Clove.
   d) Astringents – Catechu

5. Occurrence, distribution, organoleptic evaluation, microscopical evaluation, chemical constituents including tests wherever applicable and therapeutic efficacy of following categories of drugs.

   a) Drugs acting on nervous system – Hyoscyamus, Belladonna, Aconite Ashwagandha, Ephedra, Opium, Cannabis, Nux vomica.

   b) Antihypertensives – Rauwolfia

   c) Antitussives – Vasaka, Tulsi

   d) Antirheumatics – Colchicum

   e) Antitumour – Vinca

   f) Antileprotics – Chaulmoogra Oil

   g) Antidysenterics – Ipecacuanha

   h) Antiseptics and disinfectants - Neem,

   i) Antimalarials – Cinchona

   j) Oxytocics – Ergot

   k) Vitamins – Shark liver oil

Practical

Code: 292
Contacts: 3
Credits: 2

1. Identification of crude drugs (containing carbohydrate, lipid, glycosides, volatile oil, alkaloid etc.) by morphological characters.
2. Physical and chemical tests for evaluation of crude drugs wherever applicable
3. Microscopic studies of Senna leaf, Rauwolfia root, Cinamon bark, Datura flower and stem.
4. Identification of fibers and surgical dressings

Physiology

Theory

Code: PT 205
Contacts: 3
Credits: 3

1. Blood and cardiovascular system :
   a) The physiological properties, Physical characters, composition and functions of blood.
   b) The Erythrocytes, Hemoglobin, Hemolysis and suspension stability of the blood, leukocytes and platelets.
   c) The blood volume, The lymph and tissue fluids.
   d) The blood pressure.
   e) Cardiac muscle and its properties, special junctional tissues of heart.
      Cardiac cycle, cardiac output, Electrocardiogram, regulation of heart's action.
2. Respiratory system :

a) The mechanism of respiration, the air of the lungs, the physical principles governing the respiratory exchanges, the transport and delivery of Oxygen to the tissues. Intracellular oxidations and energy transfer, the carriage of carbon dioxide.
b) The control of respiration, periodic respiration, dysponea, anoxia and other abnormal forms of respiration.

3. Excretory System :
   a) Renal circulation, Structure and Functions of kidney, Functions of glomerulus, Functions of renal tubules, renal circulation, renal function tests.
   b) Composition of Urine and the factors affecting the formation of urine, factors controlling the volume of urine.
   c) Glycosuria, Micturition.
4. Endocrine glands : Anatomical position, structure, function & disorder
5. Digestive system

Practical

Code: PT 295
Contacts: 3
Credits: 2

1. Study of human skeleton and identification of different visceral organs
2. Study of different system with the help of charts and models.
3. Microscopic studies of different tissues and organs
4. Estimation of TC, DC, Hb, ESR, clotting time, bleeding time.
5. Recording of body temperature, pulse rate, blood pressure and brief understanding of ECG-PQRST waves and their significance.
6. Experimental physiology : Handling, weighing, numbering, anaesthetising and injection of mice/rat/rabbit.
7. Isotonic & isometric muscle contractions with special reference to temp., ion, bioactive molecules

SEMESTER – III

Pharmaceutical Chemistry
(Organic Chemistry)

Theory

Code: PT 304
Contacts: 3L + 1T = 4
Credits: 4

Nucleophillic aromatic substitutions: —,

1. Electrophilic and nucleophilic aromatic substitution
2. Synthesis and reaction of phenols, aromatic sulfonic acids, nitro-compound, anilines, diazonium salt, chemistry of carbohydrate

Polynuclear aromatic system :

Heterocyclic Compounds : Nomenclature of heterocyclic compounds, Chemistry, preparations and properties of some important heterocyclis compounds containing 5,6 atoms with one or two heteroatoms like O,N,S., Napthalene, Anthracene, etc.

Practical

Code: **PT 394**
Contacts: **3**
Credits: 2

At least two exercises in synthesis involving various heterocyclic ring systems. Workshop on molecular modelling of different isomers, molecular modelling on double helical structure of nucleic acid showing hydrogen bonding.

At least 3 reactions involving eletrophilic aromatic substitutions.

Pharmaceutical Analysis

Theory

Code: **PT 301**
Contacts: **3L + 1T = 4**
Credits: 4

Theoretical considerations, and application in drug analysis.

1. **Non-aqueous titrations**
2. **Complexometric titrations.**
3. **Miscellaneous Methods of Analysis :** Diazotisation titrations, Kjeldahl method of nitrogen estimation, Karl-Fischer titration, Oxygen flask combustion,
4. **Chromatography :** The following techniques will be discussed with relevant examples of Pharmacopeial products. TLC, HPLC, GLC, Paper Chromatography and Column Chromatography.

Theoretical considerations, and application in drug analysis :

1. Potentiometry
2. Conductometry
3. Amperometry

Practical
Code: **PT 391**
Contacts: **3**
Credits: 2

1. **Non aqueous Titrations :** Preparation and standardization of perchloric acid and sodium/potassium/lithium methoxides solutions; Estimations of at least one pharmacopoeial product.
2. **Complexometric Titrations :** Preparation and standardization of EDTA solution, at least one exercise related to pharmacopoeial assays by complexometric titration.
3. **Miscellaneous Determinations :** Exercises involving Karl-Fischer, Determination of alcohol content in liquid galenical.
4. Experiments involving separation of drugs from excipients and estimation.
5. Chromatographic analysis of some pharmaceutical products.

Anatomy, physiology and health education(APHE)

Theory

Code: **PT 305**
Contacts: **2L + 1T = 3**
Credits: 3

1. **Elementary Tissues of the Human Body** : Anatomical position, structure, characteristic & functions of Epithelial, connective, muscular and nervous tissues, their sub-types.
2. **Osseous System** : Structure, composition and functions of skeleton. Classification of joints, types of movements of joints, disorders of joints.
3. **Skeletal Muscles** : Gross anatomy, physiology of muscle, contraction, physiological properties of skeletal muscles and their disorders.
4. **Haemopoietic system :** Composition and functions of blood and its elements, their disorders, blood groups and their significance, mechanism of coagulation, disorders of platelets and coagulation.
5. **Lymph and Lymphatic system:** Composition, formulation and circulation of lymph; disorders of lymph and lymphatic system. Basic physiology and functions of spleen.
6. **Digestive System :** General, anatomical outline of gastrointestinal tract, function of different parts including those of liver, pancreas and gall bladder.
7. **Respiratory System :** Anatomy of respiratory system and organs.
8. **Nervous System :** General outline of central nervous system and autonomic nervous system.
9. **a)** **Demography and family planning** : Medical termination of pregnancy.
   b) **Communicable diseases**: Brief outline, their causative agents, modes of transmission and prevention (Chicken pox, measles, influenza, diphtheria, tuberculosis, poliomyelitis, helminthiasis, malaria,
   c) Filariasis, rabies, trachoma, tetanus, leprosy, syphilis, gonorrhoea and AIDS.
   d) **First Aid** : Emergency treatment of shock, snake bites, burns, poisoning, fractures and resuscitation methods.

Pharmaceutics
(Physical Pharmacy)

Theory

Code: **PT 306**
Contacts: **3L + 1T = 4**
Credits: 4

1. **Matter, Properties of Matter** : State of matter, change in the state of matter, Latent heat and vapor pressure, sublimation critical point, Eutectic mixtures, gases, aerosols-inhalers, relative humidity, liquid complexes, liquid crystals, glassy state, solids-crystalline, amorphous and polymorphism.
2. **Micromeretics and Powder Rheology** : Particle size and distribution, average particle size, number and weight distribution, particle number, methods for determining particle volume, optical microscopy, sieving, sedimentation, measurement, particle shape, specific surface, methods for determining surface area, permeability, adsorption, derived properties of powders, porosity, packing arrangement, densities, bulkiness & flow properties.
3. **Surface and Interfacial Phenomenon**: Liquid interface, surface and interfacial tensions, surface free energy, measurement of surface and interfacial tensions, spreading coefficient, adsorption at liquid interfaces, surface active agents, HLB classification, solubilization, detergency, adsorption at solid interfaces, solid gas and solid-liquid interfaces, complex films, electrical properties of interface.
4. **Viscosity and Rheology :** Newtonian systems, Law of flow, kinematic viscosity, effect of temperature, non-Newtonian systems, pseudoplastic, dilatant, plastic, thixotropy, thixotropy in formulation, determination of viscosity, capillary, falling ball, rotational viscometers.
5. **Dispersion systems :** Colloidal dispersions : Definition, types, properties of colloids, protective colloids, applications of colloids in pharmacy; Suspensions and Emulsions: Interfacial properties of suspended particles, settling in suspensions, theory of sedimentation, effect of Brownian movement, sedimentation of flocculated particles, sedimentation parameters, wetting of particles,

controlled flocculation, flocculation in structured vehicles, rheological considerations, Emulsions-types, theories, physical stability.

6. **Complexation and Protein Binding :** Classification of complexes, methods of preparation and analysis, applications. Protein binding, binding equilibrium, analysis, Thermodynamic treatment to stability constant.
7. **Kinetics and Drug Stability :** Half-life determination, Influence of temperature, light, solvent, catalytic species and other factors, Accelerated stability study, expiration dating, decomposition and stabilisation of medicinal agent.

Practicals

Code: **PT 396**
Contacts: **3**
Credits: 2

1. Determination of particle size, Particle size distribution and surface area using various methods of Particle size analysis.
2. Determination of derived properties of powders like density, porosity, compressibility, angle of repose etc.
3. Determination of surface/interfacial tension. HLB value and critical micellar concentration of surfactants.
4. Study of rheological properties of various types of systems using different Viscometers, evaluation of intrinsic viscosity of a system by viscosity determination using various concentration and if possible, determination of molar mass
5. Studies of different types of colloids and their properties.
6. Preparation of various types of suspensions and determination of their sedimentation parameters.
7. Preparation and stability studies of emulsions.
8. Accelerated stability testing, shelf-life determination and expiration dating of pharmaceuticals.
9. The effect of pH of the solubility on a slightly soluble weak acid.

Pharmaceutical Engineering

Theory

Code: **PT 307**
Contacts: **3L + 1T = 4**
Credits: 4

1. **Stoichiometry :** Units and their conversions, molecular units, basic laws, mole fraction, problems on stoichiometry, material balance and related problems, energy balance and related problems. Dimensional analysis, different types of graphic representations.
2. **Fluid Flow :** Different manometers and their application, types of flow, boundary layer concept, Reynold's number, Bernoulli's theorem, fluid friction, flow measuring devices, non-Newtonian fluid flow – basic concept.
3. **Material Handling:**
   a) Liquid handling – Different types of pumps.
   b)
   c) Gas handling-Various types of fans, blowers and compressors.
   d) Solid handling – Bins, Bunkers, Conveyers, Other solid transport systems.

4. **Filtration and Centrifugation :** Theory of filtration, industrial filters like leaf filters, rotary filter, filter press edge filter etc. filter aids, and resistances, mathematical problems. Principles of centrifugation, centrifugal filters and sedimentors, Pharmaceutical applications.
5. **Industrial Hazards & Safety precautions :** Different types of hazards like mechanical, electrical, chemical, dust, fire etc. Preventive methods and precautions. First Aid – shock, fainting, wounds, Acid and Alkali burns, poison antidotes, artificial respiration etc.

Engineering Drawing

Code: **PT 397**
Contacts: **3**
Credits: 2

I.S. Conventions of drawing – lettering, scales etc. , Orthographic Projection – first and third angle concepts Isometric drawing and Dimensioning.

Sections and Sectional Views
Bolted and riveted joints
Welded joints
Pipe joints and fittings
Types of flanges and working drawing of pulley, key etc. Pressure vessel and auxiliaries – skirt, saddle etc.
Line drawing of agitator, ball mill, mixer, filter press, Centrifuge, dryer, evaporator Calandria, granulator, sieving machine, tablet compressing machine etc.
Concept of flow diagram.

Computer Science and Applications

Theory
Code: **CS 303**
Contacts: **3L + 1T**
Credits: 4

1. **Computers Applications :**

1.1 **Introduction to Computers**. History of Computer development and respective generation: classification of computers, different parts of modern digital computer and their functions, hardware and software.

1.2 **Number system**: Binary, decimal, hexadecimal and octal number systems and their inter conversion.

1.3 **Boolean Algebra:** definition and rules, logical expressions, simplification of logical expressions (K-Map not needed). Logic Gates: Introduction to logic gates, AND, OR NOT, NOR, NAND, XOR logic gates, truth tables, simple digital circuits using logic gates.

1.4 Basic concept of operating system and its functions, classification, 9MS-DOS commands will be learned and used in Laboratory only)

1.5 Introduction to computer language, Alphabets in C

Keywords in C, Data Variables, Data Types and Rules for naming and declaring data variables, Basic Data types in C, constants, Enumerated Data Types, C Instructions and Rules for Writing Them Types of instructions

Data Manipulation Instructions
Input/Output Instructions
Flow control instructions
Decision Control Instructions
If
If-else

If-else-if
Nested if-else
Conditions

Loop Control Instructions
For loop
While loop
Do while

Selection Instructions

Functions

Components of Function
Name of a function
Body of a function
Local variables of a function
Parameters of Arguments to a function
Return Values
Prototype of a function

Arrays
What is an array?
Array Declaration
Array Initialization
Accessing individual elements of an array
Two Dimensional Arrays
Accessing the elements of a two dimensional array
More than two dimensions
Passing an array element to a function

Simple programs using C

Practical:
[Code: CS 393]
Contacts : 3
Credits : 2

1. Executing MS-DOS commands, creating and executing batch file, writing and executing simple programs in C.

2. Create tables using Oracle, insert data into the tables, update tables, modify the structure of a table, implement Foreign key and primary key constraints, Design and create a small inventory database, design and create a database of a small Hospital, Design drug-drug interaction database, retrieve different types of information using SQL.
3. Practical designed on the use of computers in drug information center, prescription filing and documentation of information on drug interaction.

SEMESTER – IV

Pharmaceutics

(Pharmaceutical Technology-I)

Theory

Code: **PT 406**
Contact: **3L + 1T = 4**
Credits: 4

1. **Liquid dosage forms :** Introduction, types of additives used in formulation, vehicles, stabilization, preservatives, suspending agents, emulsifying agents, solubilisers, colours, flavours and others; Manufacturing, packaging and evaluation.
2. **Semisolid dosage forms:** Definition, types, mechanism of drug penetration, factors influencing penetration, semi-solid bases and their selection, general formulation of semi-solids, clear gels manufacturing procedure, evaluation and packaging.
3. **Suppositories :** Definition, size, shape and doses, ideal requirements, factors affecting drug absorption, type of bases, manufacturing procedure, storage, packaging, stability of suppositories.
4. **Extraction and Galenical Products :** Principle and method of extraction, factors affecting extraction rate, choice extraction procedure, preparation of infusion, tinctures, dry and soft liquid extracts.
5. **Blood products and plasma substitutes :** Collection, processing and storage of Whole human blood and all fractions individually. Plasma substitutes – ideal requirements, PVP, dextran etc. for control of blood pressure as per I.P.
6. **Pharmaceutical Aerosol :** Mode of operation, Definition, propellants, manufacturing and packaging methods, container with all parts, pharmaceutical application and testing.
7. **Ophthalmic preparation :** Requirements, eye drops, eye lotions, eye ointments, formulation, additives, preparation, sterilization, packaging, evaluation, contact lens solution.

Practical

Code: **PT 496(1)**
Contacts: **3P**
Credits: 2

1. Preparation, evaluation and packaging of liquid orals like solution, suspension, emulsion; Eye drops, eye ointments, ointments, creams, suppositories.
2. Preparation of pharmacopoeal extracts and galenical products utilizing various methods of extraction.

Pharmacognosy

Theory

Code: **PT 402**
Contacts: **3L + 1T = 4**
Credits: 4

1. **Resins :** Study of Drugs Containing Resins and Resin Combination like Colophony, podophyllum, jalap, cannabis, capsicum, myrrh, asafoetida, balsam of tolu, balsam of peru, benzoin, turmeric, ginger.
2. **Tanins :** Study of tannins and tannin containing drugs like Gambir, gall and myrobalan.
3. **Volatile Oils :** General methods of obtaining volatile oils from plants; Study of volatile oils of Mentha, Cassia, Lemon peel, Orange peel, Lemon grass, Citronella, Caraway, Dill, Spearmint, Eucalyptus, Chenopodium, Valerian, Musk, Gaultheria, Sandal wood.
4. **Fibers :** Study of fibres used in pharmacy such as cotton, silk, wool, nylon, glass-wool, polyester and asbestos.

5. **Pharmaceutical aids :** Study of pharmaceutical aids like talc, diatomite, kaolin, bentonite, gelatine and natural colours.
6. Study of the biological sources, commercial varieties, chemical constituents, substitutes, adulterants, uses, diagnostic macroscopic and microscopic features and specific chemical tests of following groups of drugs containing glycosides :
   i) **Saponins**: Ginseng, dioscorea, sarsaparilla and senega
   ii) **Cardioactive sterols** : squill, strophanthus and thervetia
   iii) **Anthraquinone cathartics** : cascara
   iv) **Others** : Psoralea, Ammi majus, Ammi visnaga, gentian, chirata, quassia.
7. Studies of traditional drugs, Common vernacular names, botanical sources, morphology, chemical nature of chief constituents, pharmacology, categories and common uses of following indigenous drugs :
   Amla, Kantkari, Satavari, Tylophora, Bhilawa, Bach, Rasna, Punarnava, Chitrack, Apamarg, Gokhru, Shankhapushpi, Brahmi, Arjuna,Ashoka, Methi, Lahrun, Palash, Guggal, Gyumnema, Shilajit.
8. The holistic concept of drug administration in traditional systems of medicine, Introduction to ayurvbedic preprations like Aristha, Asvas, Gutikas, Tailas, Churnas, Lehyas, Bhasmas.

Practical

Code: **PT 492**
Contacts: **3**
Credits: 2

1. Microscopic study of powdered crude drugs containing volatile oil, glycosides, alkaloids etc.
2. Laboratory experiments on isolation, identification, separation and purification of various groups of constituents present in crude drugs of pharmaceutical significance.
3. Chemical tests for alkaloids, glycosides, steroids, flavonoids, tannins and resins etc.

Pharmaceutical Chemistry
(Bio-chemistry)

Theory

Code: **PT 404**
Contacts: **3L + 1T = 4**
Credits: 4

1. Transport processes across cell membrane.
2. Production of ATP and its biological significance
3. Introduction to 3D structure of protein, stability and denaturation of protein, allosteric proteins.
4. **Enzymes :** Nomenclature, enzyme kinetics and its mechanism of action, mechanism of inhibition, enzymes and iso-enzymes in clinical diagnosis.
5. **Co-enzymes** : Vitamins as co-enzymes and their significance, Metals as co-enzymes and their significance.
6. **Carbohydrate Metabolism** : Conversion of polysaccharide to glucose – 1 – phosphate, Glycolysis and fermentation and their regulation, Gluconeogenesis and glycogenolysis, Metabolism of galactose and galactosemie, Role of sugar nuclectides in biosynthesis and Pentosephosphate pathway.
7. **The Citric Acid Cycle** : Significance, reactions and energetic of the cycle, Amphibolic role of the cycle, and Glyoxalic acid cycle.
8. **Lipids Metabolism** : Oxidation of fatty acids, α-oxidation & energetic, β-oxidation, ω-oxidation, Biosynthesis of ketone bodies and their utilization, Biosynthesis of saturated and unsaturated fatty acids, Control of lipid metabolism, Essential fatty acids & eicosanoids (prostaglandins, thromboxanes and leukotrienes) phospholipids, and sphingolipids.
9. **Biological Oxidation** : Redox-Potential, enzymes and co-enzymes involved in oxidation reduction & its control, The respiratory chain, its role in energy capture and its control, Energetic of oxidative

phosphorylation, Inhibitors of respiratory chain and oxidative phosphorylation, Mechanism of oxidative phosphorylation.

Practical

Code: **PT 494**
Contacts: **3**
Credits: 2

1. Experiments of sugar – test for reducing sugar, colorometric estimation of sugar, chromatographic separation of sugars.
2. Titration curve for amino acids
3. Separation of amino acids by TLC method.
4. Experiments on lipids – saponification no., iodine no., separation of lipids by TLC.
5. Quantitative estimation of amino acids, protein,
6. Experiments on clinical bio-chemistry – blood glucose estimation, cholesterol in blood, separation of plasma proteins by paper electrophoresis, non-protein N_2 – in blood, estimation of SGOT, SGPT and ALP in the serum.
7. Experiments on enzymes – effect of pH, effect of temperature and use of inhibitors.

Physiology

Theory

Code: **PT 405**
Contacts: **3L + 1T = 4**
Credits: 4

1. Nervous system, Central nervous system : Nerve impulse; Synapse Reflex arc, Receptor, organs, reflex action; Physiological mechanism governing the posture and equilibrium; The spinal cord and brain stem; The extra-pyramidal system, the thalamus and hypothalamus; Condition reflex, sleep; Cerebrum; cerebrospinal fluid.Autonomic nervous system : Classification, general arrangement, dual supply, drugs action on ANS, Structure of autonomic ganglia, general arrangement and function of Sympathetic and parasympathetic system.
2. Special sense : Taste (gustation). Smell (alfaction), vision and hearing
3. Body temperature and its regulation, pyrexia and hypotherms.
4. Reproductive system

Pharmaceutical Engineering

Theory

Code: **PT 407**
Contacts: **3L + 1T = 4**
Credits: 4

1. **Heat Transfer :** Heat transfer by conduction, problems on steady state heat conduction; heat transfer by convection, heat transfer coefficient, heat exchangers, problems on convection, heat transfer by radiation, Stefan's and Kirchoff's Laws, pharmaceutical applications.
2. **Evaporation :** Principles of evaporation, different evaporators like short and long tubes, forced convective and agitated film evaporators. Factors affecting evaporation rate. Multiple effect evaporation, pharmaceutical applications, Mathematical problems.

3. **Size Reduction and Size Separation :** Utility of size reduction and separation, Laws of crushing and grinding, different crushers and grinders like Roll crusher, hall mill, hammer mill, colloid mill, fluid energy mill etc.; fluid classifiers, Stoke's Law, laws of sedimentation, Powder characterisation, particle size analysis.
4. **Mixing :** Sampling and statistics of mixing, Different mixers: solid-solid, solid-liquid and liquid-liquid, Problems of mixing and mixer selection.
5. **Crystallisation:** Introduction – Crystal characteristics, solubility curves, supersaturation theory, nucleation, crystal growth etc., Industrial crystallisers like Swenson-Walker, tank type, agitated type and vacuum type etc. Different problems of crystallisation like caking etc.
6. **Materials of construction:** Introduction – Corrosion, material properties, metals, non-metals and alloys for fabrication, specially stainless steel, aluminium, glass, polymers, rubber, ceramics and different Ni, Cr, Mn, Mo, Al, Fe, Si alloys. Different linings and surface coatings.

Practical Code : PT 497
Contacts : 3 hrs./week
Credit : 2

Practicals will be conducted as per the subject content in theory (at least 7 experiments)

SEMESTER - V

Pharmaceutics
(Pharmaceutical Technology-II)

Theory

Code: PT 506
Contacts: 3L + 1T = 4
Credits: 4

1. **Tablets :**
   a) Formulation of different types of tablets, granulation technology on large scale by various techniques, physics of tablets making, different types of tablet compression machinery and equipment employed, evaluation of tablet, Manufacturing area design and layout flow diagram of tablet manufacturing.
   b) Coating of tablets : Types of coating, sugar coating, film coating, film forming materials, formulation of coating solution, equipment for coating, coating process, evaluation of coated tablets, Physiological availability and tablet coating.
   c) Stability Kinetics and quality assurance.

2. **Capsules :** Advantages and disadvantages of capsule dosage form, material for production of hard gelatine capsules, size of capsules, method of capsule filling, sealing and packaging, Soft gelatine capsules shell and its content, important of base adsorption and factors, quality control, stability testing and storage.
3. **Cosmetology and Cosmetic preparation** : Fundamentals of cosmetic science, structure and function of skin and hair, formulation, preparation, packaging and evaluation of cosmetic products for skin, hair, eye, denitrifies and preparations like nail polish, lipstick; baby care products; shaving cream, after-shave lotions, etc.

Practical

Code: **PT 596**
Contacts: **3**
Credits: 2

1. Formulation of various types of cosmetics for skin, hair, eye and different type of preparations.
2. Preparation, evaluation and packaging of tablets
3. Preparation , evaluation and packaging of hard gelatine capsules.

Pharmacology

Theory

Code: **PT 508**
Contacts: **3L = 3**
Credits: 3

1. **General Pharmacology :** Introduction to Pharmacology, routes of drug administration, mechanism of action, Combined effect of drugs, Factors modifying drug action and related conditions.
2. **Fate of the drug and its administration,** Absorption, Distribution, Metabolism and Execration of drugs (ADME), Adverse Drug Reactions, drug interaction, Bio-transmission.
3. **Pharmacology of Peripheral Nervous System :**
   a) Neurohumoral transmission (amines and related substance)
   b) The choline esters and cholinesterase, Atropine and atropine like drugs, Drugs that block neuro-musculer or ganglionine transmission.
   c) Neuromuscular blocking agents, Autogonists if adrenergic neurone activity, the cyclic neucleotides, 5-hydroxy tryptamide, histamine and its antagonist
4. **Pharmacology of Central Nervous System :**
   a) Neurohumoral transmission in the C.N.S.
   b) General Anaesthetics, local anaesthetics
   c) Alcohols and disulfiram
   d) Sedatives, hypnotics, Anti-anxiety agents
   e) Psychopharmacological agents: Anti-depressant, maniacs agents
   f) Anti-epileptics drugs
   g) Anti-Parkinsonian Drugs
   h) Analgesics, Antipyretics, Anti-inflammatory and Anti-gout drugs
   i) Narcotic analgesics and antagonists
   j) Drug-Addiction and Drug Abuse.
5. Screening and testing of drugs
6. Toxicity of drugs

Pharmaceutical Microbiology

Theory

Code: **PT 509**
Contacts: **3L**
Credits: 3

1. Introduction to the scope of microbiology
2. Structure of bacterial cell.

3. Classification of microbes and their taxonomy. Actinomycetes bacteria, rickettsiae, spirochetes and viruses.
4. Identification of Microbes : Stains and types of staining techniques, electron microscope.
5. Nutrition, cultivation, isolation of bacteria, actinomycetes, fungi, viruses, etc.
6. Control of microbes by physical and chemical methods.
   a) Disinfection, factors influencing disinfectants, dynamics of disinfection, disinfectants and antiseptics and their evaluation.
   b) Sterilization, different methods, validation of sterilization methods & experiments.
7. Sterility testing of all Pharmaceutical products.
8. Immunity, primary and secondary, defensive mechanisms of body, microbial resistance, interferon.
9. Microbial assays of antibiotics, Vitamins (Vitamin B_{12} & Niacin), amino acids.
10. Diseases and disease-producing microorganisms, like *Staphylococcus aureus, Streptococcus pyrogenes, E. coli, Sulmonella typhi, Vibrio choleri and Yersinia pestis;* virulence factors.
11. Water analysis by microbiological method
12. Pyrogen by LAL Test

Practical

Code: **PT 599**
Contacts: **3**
Credits: 2

Experiments devised to prepare various types of culture media, sub-culturing of common aerobic and anaerobic bacteria, fungus and yeast, various staining methods, various methods of isolation and identification of mircobes, sterilization techniques and their validation of sterilizing techniques, evaluation of antiseptics and disinfectants, testing the sterility of pharmaceutical products as per I.P. requirements, microbial assay of antibiotics and vitamins, water analysis.

Pharmaceutical Chemistry
(Medicinal Chemistry)

Theory

Code: **PT 503**
Contacts: **3L + 1T = 4**
Credits: 4

1st Half :

1. **Basic Principles of Medicinal Chemistry :** Physico-chemical aspects (Optical, geometric and bio-isosterism) of drug molecules and biological action, Drug-receptor interaction including transduction mechanisms.
2. **Synthetic procedures of selected drugs :** Mode of action, uses, structure activity relationship including physico-chemical properties of the following classes of drugs :
   Drugs acting at Synaptic and neuro-effector junction sites :
   i) Cholinergics and Anti-cholinesterases
   ii) Adrenergic drugs
   iii) Antispasmodic and anti-ulcer drugs
   iv) Neuromuscular blocking agents.
3. Concept of QSAR and descriptors, statistical loop for QSAR, classical QSAR (Hansh and freewilson methods), CADD, Receptor based drug design like cyproheptadine HCL, paracetamol, diclofenac sodium, ibuprofen and analgin.
4. **Synthetic procedures of selected drugs :** Mode of action, uses, structure activity relationship including physicochemical properties of the following classes of drugs :

a) **Autocoids**
   i) Antihistamines
   ii) Eicosancids
   iii) Analgesic-antipyretics, anti-inflammatory (non-steroids) agents.

b) **Drugs affecting uterine motility** :
   Oxytocics (including oxytocin, ergot alkaloids and prostaglandins)
   Biochemical approaches in drug designing wherever applicable should be discussed.

Practicals

Code: **PT 593**
Contacts: **3**
Credits: 2

1. Synthesis of selected drugs from the course content (at least 3 experiments).
2. Establishing the pharmacopoeial standards of the drugs synthesized.
3. Special analysis of some selected drugs from the course content like cyproheptadine HCL, paracetamol, Diclofenac sodium, Ibuprofen and Analgin

Pharmaceutical Chemistry
(Bio-chemistry)

Theory

Code: **PT 504**
Contacts; **3**
Credits: 3

1. **Hormones :** Pitutary gland, Thyroid gland and hormones secreted from pancreas
2. **Metabolism of Ammonia and Nitrogen Containing Monomers** : Nitrogen balance, bio-synthesis of amino acid, catabolism of amino acids (phenyl alamine methionine, histidime, alanine protein glycine) Conversion of amino acids to specialised products, Assimilation of ammonia, Urea cycle, metabolic disorders of urea cycle, Metabolism of sulphur containing amino acids, Porphyrin biosynthesis, formation of bile pigments, hyperbilirubinemia, Purine biosynthesis, Purine nucleotide interconversion, Pyrimidine biosynthesis, and Formation of deoxyribounucleotides.
3. **Biosynthesis of Nucleic Acids** : Brief introduction of genetic organization of the mammalian genome, alteration and rearrangements of genetic material, Biosynthesis of DNA and its replication, Mutation, Physical & chemical mutagenesis/carcinogenesis, DNA repair mechanism, Biosynthesis of RNA (Transcription) and Post transcriptional modifications.
4. **Vitamines :** Water and fat soluble vitamines
5. **Genetic Code and Protein Synthesis** : Genetic code, Components of protein synthesis, and Inhibition of protein synthesis, post translational modifications and distribution of protein of different organelles, Brief account of genetic engineering and polymerase chain reactions.
6. **Regulation of gene expression**.

Pharmaceutical Engineering

Theory

Code: **PT 507**
Contacts: **3**
Credits: 3

1. **Molecular Diffusion and Interphase Mass Transfer**: Molecular diffusion in gas and liquid systems. Introduction to interphase mass-transfer, mathematical problems
2. **Distillation**: Batch distillation, rectification of binary mixtures, bubble cap, sieve phate and packed bed columns, design method of plate co,umns, steam, vacuum, molecular and azeotropic distillations, problems (Mathematical problems)
3. **Extraction**: Solvent extraction (liquid-liquid) and leaching, parallel current and cross-treatment method, equipments like batch extractor, centrifugal extrictor, continuous leacher etc. problems (mathematical problems)

4. **Drying :** Mechanism of drying, theory of drying, concept of EMC, CMC, FMC, drying rate curves, drying problems, pharmaceutical dryers like tray, vacuum, rotary, fluidized-bed, pneumatic, spray, freeze and infrared dryers, mathematical problems.
5. **Humidification and Refrigeration:** Dry and wet bulb thermometry, Psychometirc chart, humidity measurement, Equipments for humidification and dehumidification, pharmaceutical application and mathematical problems, principles of refrigeration, units of refrigeration, refrigerants, application in pharmacy.
6. **Process control system:** Basic instrumentation and control in pharmaceutical industries, measurement of temperature, pressure, flow rate, humidity, vacuum and level by automatic process control systems.

Practical

Code: PT 597
Contacts: 3P
Credits: 2

1. Measurement of flow of fluids and their pressure, determination of Reynold's number and calculation of Frictional losses.
2. Evaluation of filter media, determination of rate of filtration and study of factors affecting filtration.
3. Determination of humidity – use of Dry Bulb and Wet Bulb.
4. Determination of overall heat transfer co-efficient.
5. Determination of rate of evaporation.
6. Determination of rate of drying, free moisture content and bound moisture content.
7. Experiments to illustrate principles of size reduction, Laws governing energy and power requirements of size Reduction.
8. Experiments on batch distillation and to verify Reileigh's equation, study of the performance of different dryers.

SEMESTER – VI

Pharmaceutical Chemistry
(Medicinal Chemistry)

Theory

Code: PT 603
Contacts: 3L + 1T = 4
Credits: 4

Synthetic procedures of selected drugs, mode of action, uses, structure activity relationship including Physico-Chemical properties of the following classes of drugs :

1. **Drugs acting on the Central Nervous System :** General Anesthetics, Local Anesthetics, Hypnotics and Sedatives, anti-convulsants, Antiparkinsonism drugs, Antipsychotic, antidepresants,

2. **Diuretics, Cardiovascular drugs (**anti-anginal, antirrhythmic, antihypertensive, anticoagulant. Anti-platelet and antihyperlipidemics

3. **Steroids and related drugs :** Steroidal nomenclature and stereochemistry, androgens and anbolic agents, estrogens and progestational agents, adrenocorticoids.
4. **Alnatoids –** Definition, general identification test, determination of functional group and structure elucidation of Atropin and Ephidrine

Practical

Code: **PT 693**
Contacts: **3**
Credits: 2

1. Workshop on stereomodel use of some selected drugs.
2. Synthesis and identification of selected compounds from the course content (Benzil, Benzillicacid, Diphenyl hydantoin, Benzocaine).
3. Assay of some selected drug formulation from the course content (Propranolol HCL, warfarin sodium, verapamil hydrochloride, chlordiazepoxide, spironolactone, diazepam) (any four).

Pharmaceutics
(Pharmaceutical Technology)

Theory

Code: **PT 606**
Contacts: **3**
Credits: 3

1. **Parenteral Products :**
   a) Pre-formulation factors, routes of administration, water for injection, pyrogenicity, non-aqueous vehicle, isotonicity and methods of its adjustment.
   b) Formulation details; containers, closures and their selections.
   c) Pre-filling treatment, washing of containers and closures, preparation of solution and suspension, filling and closing of ampoules, vials, infusion fluids, lyophillization and preparation of sterile powders, equipment for large scale manufacture and evaluation of parenteral products.
   d) Aseptic Techniques : source of contamination and methods of prevention, design of aseptic area, laminar flow bench services and maintenance.
   e) Sterility testing of pharmaceuticals.
2. **Surgical Products :** Definition, primary wound dressing, absorbents, surgical cotton, surgical gauze etc., bandages, adhesive tape, protective cellulosic hemostatics, official dressing, absorbable and non-absorbable sutures, ligatures and catguts, preparation and sterilization of surgical catguts.
3. **Packaging of Pharmaceutical Products :** Packaging components, types, specifications and methods of evaluation, stability aspect of packaging, packaging equipment, factors influencing choice of containers, legal and other official requirements for containers, packaging testing.
4. **Novel drug delivery system :** Introduction to novel drug delivery systems like micro-capsule and micro-pellet parenteral and implantable therapeutic systems, transdermal therapeutic systems, micro-particulate drug carrier system, micro-encapsulation – types, method of preparation and evaluation.

Practical

Code: **PT 696**
Contacts: **3**
Credits: 2

1. Preparation of a sustained release oral dosage form and its evaluation
2. Evaluation of materials used in pharmaceutical packaging.
3. Paraffin gauge dressings.

Pharmaceutics
(Biopharmaceutics and Pharmacokinetics)

Theory

Code: **PT 611**
Contacts: **3L + 1T = 4**
Credits: 4

1. Introdution to Biopharmaceutics and Pharmacokinetics and their role in formulation development and clinical setting.
2. **Biopharmaceutics** :
   2.1 Passage of drugs across biological barrier (passive diffusion, active transport, facilitated diffusion and pinocytosis)
   2.2 Factors influencing absorption-Physicochemical, physiological and pharmaceutical.
   2.3 Drug distribution in the body, plasma protein binding.
3. **Bioavailability and bioequivalence** :
   a) Measures of bioavailability, C_{max}, t_{max} and area under the curve (AUC).
   b) Design of single dose bio-equivalence study and relevant statistics.
   c) Review of regulatory requirements for conduction of bio-equivalent studies.

4) **Pharmacokinetics** :

   a) Significance of plasma drug concentration measurement
   b) Compartment model-Definition and Scope
   c) Pharmacokinetics of drug absorption-Zero order and first order absorption rate constant using Wagner – Nelson and Loo-Reigelman method.
   d) Volume of distribution and distribution coefficient.
   e) Compartment kinetics-One compartment and two compartment models. Determination of pharmacokinetic parameters from plasma and urine data after drug administration by intravascular and oral route.
   f) Curve fitting(method of Residuals), regression procedures.
   g) Clearance concept, Mechanism of renal clearance, clearance ratio, determination of renal clearance.
   h) Extraction ratio, hepatic clearance, biliary excretion, Extrahepatic circulation.
   i) Non-linear pharmacokinetics with special reference to one compartment model after I.V. drug administration, Michaeles Menten Equation, detection of non-linearity (Saturation mechanism).

5. **Clinical Pharmacokinetics :**

   a) Definition and scope
   b) Dosage adjustment in patients with and without renal and hepatic failure.
   c) Design of single dose bio-equivalence study and relevant statistics.
   d) Pharmacokinetic drug interactions and their significance in combination therapy.

Practical

Code: **PT 697**
Contacts: **3P**
Credits: 2

1. Analysis of biological specifications for drug content and estimation of the pharmacokimetic parameters.
2. In vitro evaluation of different dosage forms for drug release.
3. Absorption studies – in vitro
4. Statistical treatment of pharmaceutical data.

Pharmacology

Theory

Code: PT 608
Contacts: 3
Credits: 3

1. **Pharmacology of Cardiovascular System :**
   a) Digitalis and cardiac glycosides
   b) Antihypertensive drugs
   c) Anti-anginal and Vasodilator drugs
   d) Anti-arrhythmic drugs
   e) Anti-hyperlipedemic drugs
   f) Drugs used in the therapy of shock

2. **Drugs Acting on the Hemopoetic System :**
   a) Hematinics
   b) Anticoagulants, Vitamin K and hemostatic agents.
   c) Fibrinolytic and anti-platelet drugs

3. **Bioassay**: Definition; merits and demerits threshold dose bracketing, four point and other assay; bioassay of acetylcholine, hydroxytryptamine, adrenaline, noradrenaline, sedative agents, oxytocin, digitalis, different hormones, local anesthetics, etc.

4. **Drugs acting on urinary system :**
   a) Fluid and electrolyte balance
   b) Diuretics
5. **Autocoids :**
   a) Histamine, 5-HT and their antagonists
   b) Prostaglandins, thromboxanes and leukotrienes
6. **Drugs Acting on the Respiratory System :**
   a) Anti-asthmatic drugs including bronchodilators
   b) Anti-tussives and expectorants

Practical

Code: PT 698
Contacts: 3
Credits: 2

1. **Experiments on intact preparations :**
   Study of different routes of administration of drugs in mice/rats.
2. **Experiments on Central Nervous system :**
   Recording of spontaneous motor activity, stereotype, analgesia, anticonvulsant activity, and inflammatory activity and muscle relaxant activity of drugs using simple experiments.

3. **Effects of autonomic drugs on rabbit's eye :**

4. Effects of various agonists and antagonists and their characterization using isolated preparations like frog's rectus abdominis muscle and isolated ileum preparations of rat guinea pig and rabbit.

5. **Experiments on Isolated Preparations : (at least three)**
   a) To record the concentration response curve (CRC) of acetylcholine using rectus abdominis muscle preparation of frog.
   b) To study the effects of physostigmine and d-tubocurarin on the CRC of acetylcholine using rectus abdominis muscle preparation of frog.
   c) To record the CRC of 5-HT on rat uterus preparation.
   d) To record the CRC of histamine on guineapig ileum preparation
   e) To record the CRC of noraderenaline on rat anococcygeus muscle preparation.
   f) To record the CRC of oxytocin using rat uterus preparation

6. **Abnormal toxicity test (Phenol)**

Pharmaceutical Biotechnology & Industrial Microbiology

Theory

Code: PT 609
Contacts: 3
Credits: 3

1. **Immunology and Immunological Preparations :** Principles, antigens and Haptens**,** Immune system, cellular humoral immunity, immunological tolerance, antigen-antibody reactions and their applications. Hypersensitivity, active and passive immunization, Vaccines – preparation, standardization and storage.
2. **Genetic Recombination :** Microbialgenetics & variation, Transformation, conjugation, transduction, protoplast fusion and gene cloning and their applications, Development of hybridoma for monoclonal antibodies, Study of drugs produced by biotechnology such as Activase, Humulin, Humatrope, HB etc
3. **Antibiotics :** Historical development of antibiotics, Antimicrobial spectrum and methods used for their standardization, Screening of soil for organisms producing antibiotics, fermenter, its design, control of different parameters. Isolation of mutants, factors influencing rate of mutation. Design of fermentation process. Isolation of fermentation products with special reference to penecillins, streptomycins tetracyclines and vitamin B12.
4. **Microbial Transformation :** Introduction, types of reactions mediated by microorganisms, design of biotransformation processes, selection of organisms, biotransformation process and its improvements with special reference to steroids.
5. **Enzyme immobilization :** Techniques of immobilization of enzymes, factors affecting enzyme kinetics. Study of enzymes such as hyaluronidnse, penicillinase, streptokinase and streptodornase, amylases and proteases etc. Immobiliztation of bacteria and plant cells.
6. Fermentative Production of alcohol

Elective-I

Theory
Code: :
Contacts: 3L
Credits: 3

Students may opt any one of the following subjects :

1. PT610A: Computer Application in Pharmaceutical Technology and in Clinical Pharmacy
2. PT610B: Advanced Pharmaceutical Biotechnology

SEMESTER - VI

Pharmaceutics
(Pharmaceutical Technology)
Theory

Code: PT706
Contacts: 3
Credits: 3

1. **Preformulation studies :**
   a) Introduction, qualification of preformulators, microscopy, thermal analysis, x-ray polymorphism, hygroscopicity, density, powder flow, solubility, Pka, P-C dissolution.
   b) Study of chemical properties of drugs like hydrolysis, oxidation, reduction, racemization, polymerization etc. and their influence on formulation and stability of products.
   c) Study of pro-drugs in solving problems related to stability bio-availability and elegancy of formulations.
2. Design, development and process validation methods for pharmaceutical operations involved in the production of pharmaceutical products with special reference to tablets, suspensions.
3. Stabilization and stability testing protocol for various pharmaceutical products.
4. **Performance evaluation methods** :
   In vitro dissolution studies for solid dosage forms method interpretation of dissolution data.
5. GMP and quality assurance, Quality audit.
6. Principle, production and evaluation of oral controlled released formulations.

Practical

Code: PT 796
Contacts: 3
Credits: 2

1. Dissolution testing and data evaluation for oral solid dosage forms.
2. Design, development and evaluation of controlled release formulations.

Note: At least seven experiments to be performed

Pharmaceutical Chemistry
(Medicinal Chemistry-III)

Theory

Code: PT 703
Contacts: 3
Credits: 3

Structure, Synthetic procedures uses of the selected drugs and mode of action of the following classes of drugs :- ,

1. **Anti-biotics & Chemotherapeutic agents** : β-lactam, chloramphenicol, macrolides, aminoglycosides, Macrolides, Chloramphenicol, Anthelmintic Fluoroquinolones, Antiviral, antimalarial, Antifungal, Antimaoebic, Antileprotic and Antitubercular drugs).
2. Antineoplastic agents
3. Thyroid and anti-thyroid drugs
4. Insulin and oral hypoglycaemic agents

Practical

Code: PT 793
Contacts: 3P
Credits: 2

1. Synthesis of any three selected drugs (e.g. sulphacetamide, ethambutol, PABA, Isonicotinic acid etc.,)
2. Pharmacopoeial assay of any four selected drugs (any three) formulations (Chlorpropamide, Albendazole, Metformin HCL, Rifampicin, Trimethoprim)

Pharmacognosy

Theory

Code: PT 702
Contacts: 3
Credits: 3

1. Biogenesis and pharmacological activity of medicinally important monoterpenes, sesquiterpenes, diterpenes and triterpenoids.
2. **Carotenoids** : α-carotenoids, β-carotinoids, Vitamin A, Xanthophylls of medicinal important.
3. **Glycosides** : Chemistry and bio-synthesis of digitoxin, digoxin, hecogenin, sennosides, diosgenin and sarasapogenin.
4. **Alkaloids** : Chemistry, biogenesis and pharmacological activity of atropine and related compounds; quinine, reserpine, morphine, papaverine, ephedrine, ergot and vinca alkaloids, general method for isolation of alkaloids.
5. Historical development of plant tissue culture, types of cultures, nutritional requirements, growth and their maintenance, Applications of plant tissue culture in pharmacognosy.
6. Marine pharmacognosy, novel medicinal agents from marine sources.
7. Cultivation, collection, identification, preservation of important medicinal plants and herbs
8. Screening of flavonoids and polyphenols in plant extracts.
9. Basic metabolic pathways and biogenetics of secondary metabolites of pharmaceutical importance.
10. Herbal cosmetics

Pharmacology

Theory

Code: PT 708
Contacts: 3
Credits: 3

1. **Pharmacology of Endocrine System :**
   a) Hypothalamic and pituitary hormones
   b) Thyroid hormones and anti-thyroid drugs, calcitonin.
   c) Insulin, oral hypoglycaemic agents & glucagon
   d) ACTH and corticosteroids
   e) Androgens and anabolic steroids
   f) Estrogens, progesterone and oral contraceptives.
   g) Drugs acting on the uterus.

2. **Chemotherapy ;**
   a) General Principles of Chemotherapy
   b) Sulfonamides and cotrimoxazole
   c) Antibiotics-Penicillins, Cephalosporins, Chloramphenicol, Etythromycin, Quinolones and Miscellaneous Antibiotics.
   d) Chemotherapy of tuberculosis, leprosy, fungal diseases, viral diseases, urinary tract infections and sexually transmitted diseases.
   e) Chemotherapy of malignancy and Immunosuppressive Agents

3. **Drugs Acting on the Gastrointestinal Tract :**
   a) Antacids, Anti Secretory and Anti-ulcer drugs
   b) Laxatives and anti-diarrhoeal drugs.
   c) Emetics and anti-emetics

Elective -II

Code:
Contacts: 3
Credits: 3

Students may opt any one of the following subjects :

1. PT709A: Packaging Technology
2. PT709B: Advanced Pharmacognosy
3. PT709C: Pharmaceutical Marketing Management

Project

Code: PT 783
Contacts: 8
Credits: 6

SEMESTER – VIII

Pharmaceutical Industrial Management

Theroy
Code: PT 812
Contacts: 3
Credits: 3

1. **Concept of Management :** Administrative Management (Planning, Organizing, Staffing, Directing and Controlling), Entrepreneurship development, Operative Management (Personnel, Materials, Production, Financial, Marketing, Time/space, Margin/Morale). Principles of Management (Co-ordination, Communication, Motivation, Decision-making, leadership, Innovation, Creativity, Delegation of Authority/Responsibility, Record Keeping). Identification of Key points to give maximum thrust for development and perfection.
2. **Accountancy** : Principles of Accountancy, Ledger posting and book entries, preparation of trial balance, columns of a cash book, Bank reconciliation statement, rectification of errors, Profits and

loss account, balance sheet, purchase, keeping and pricing of stocks, treatment of cheques, bills of exchange, promissory notes and hundies, documentary bills.

3. **Economics :** Principles of economics with special reference to the laws of demand and supply, demand schedule, demand curves, labour welfare, general principles of insurance and inland and foreign trade, procedure of exporting and importing goods.

3. **Pharmaceutical Marketing :** Functions, buying, selling, transportation, storage, finance, feedback, information, channels of distribution, wholesale, retail, departmental store, multiple shop and mail order business.

5. **Salesmanship :** Principles of sales promotion, advertising, ethics of sales, merchandising, literature, detailing, Recruitment, training, evaluation, compensation to the pharmacist.

7. **Market Research :**
   a) Measuring & Forecasting, Market Demands, Major conception, demand measurement, Estimating current demand, Geo-demographic analysis, Estimating industry sales, Market share & Future demand.
   b) Market Segmentation & Market Targeting.

8. **Materials Management :** A brief exposure or basic principles of materials management-major areas, scope, purchase, stores, inventory control, an evaluation of material management.

9. **Production Management :** A brief exposure of the different aspects or Production, Management-Visible and Invisible inputs, Methodology of Activities. Performance Evaluation Technique, Process-Flow, Process Know-how, Maintenance Management.

10. **Personal Management**

11. **Concept of GLP, ISO 9000 and TQM**

Pharmaceutical Jurisprudence & Ethics

Theory

Code: **PT 813**
Contacts: **3**
Credits: 3

1. Introduction
   Pharmaceutical legislation – A brief review.
2. An elaborate (practical oriented) study of the following
   a) Pharmaceutical Ethics
   b) Pharmacy Act 1948
   c) Drugs and Cosmetics Act 1940 and Rules 1945

3. An elaborate (practical oriented) study of the following
   d) Medicinal & Toilet Preparations(Excise Duties) Act 1955
   e) Narcotic Drugs & Psychotropic Substances Act 1955 & Rules
   f) Drugs Price Control Order.
4. A brief study of the following with special reference to the main provisions.
   a) Drugs and Magic Remedies(Object Advertisements Act 1954)
   b) Medical Termination of Pregnancy Act 1970 & Rules 1975.
   c) Prevention of Cruelty to Animals Act 1960.
   d) States Shops & Establishments Act & Rules.
   e) Factories Act 1948.
   f) Patents Act (latest)

Note: The teaching of all the above Acts should cover the latest amendments.

Hospital & Clinical Pharmacy

Theory
Code: PT 818
Contacts: 3
Credits: 3

Hospital pharmacy :

1. **Organisation and Structure :** Organisation of hospital pharmacy, Responsibilities of a hospital pharmacist, Pharmacy and therapeutic committee.
2. **Hospital Formulary** : Contents, preparation and revision of hospital formulary.
3. **Drug distribution Systems in Hospitals :**
   a) Out-patient dispensing, methods adopted.
   b) Dispensing of drugs to in-patients. Types of drug distribution systems, Charging policy, labelling.
4. **Manufacture of Sterile and Nonsterile Products :** Policy making of manufacturable items, demand and costing, personnel requirements, manufacturing practice. Master formula Card, production control, Manufacturing records.

Clinical Pharmacy

1. Introduction to Clinical Pharmacy.
2. **Important Disorders of Organ Systems and their Management :**
   a) Cardiovascular Disorders-Hypertension, Congestive Heart Failure, Angina, Acute Myocardial Infraction, Cardiac arrhythmia.
   b) CNS Disorders : Epilepsy, Parkinsonism, Schizophrenia, Depression.

3. Basic Concepts of Pharmacotherapy.
   a) Drug use during Pregnancy
   b) The Basics of Drug Interactions, types of drug-drug interaction, pharmacokinetic and pharmacodynamic drug interaction, drug-food interaction.
4. Concept of Essential Drugs and Rational use of drug.
5. Basic concepts of Clinical trials – Phase-I, Phase-II, Phase-III & IV
6. Basic concept of Clinical trial monitoring

Pharmaceutical Analysis

Theory

Code: PT 801
Contacts: 3
Credits: 3

The theoretical aspects, basic instrumentation, elements of interpretation of spectra and applications of the following analytical techniques would be discussed :

1. Ultraviolet and visible spectrophotometry
2. Fluorimetry
3. Infrared spectrophotometry(FT-IR – an introduction)
4. Flame Photometry
5. Nuclear Magnetic Resonance Spectroscopy
6. Mass-spectrometry
7. Atomic Absorption spectroscopy

8. Radio immunoassay

Practical

Code: PT 891
Contacts: 3
Credits: 2

1. Quantitative estimation as per pharmacopoeial method of at least seven formulations containing single drug or more than one drug, using instrumental techniques
2. Estimation of Na^+, K^+, Ca^{++} ions using flame photometry.

ELECTIVE SUBJECTS

SEMESTER-VI

Elective - I
Computer application in Pharmaceutical Technology
Paper Code :PT 610A

3 hr / week

Relational Database and SQL

Introduction to data base, DBMS. Database versus early file keeping system, need for DBMS, Database Languages, users and administrators, Database architecture, types of databases.
Integrity-: domain constraints and referential integrity
Introduction to Relational Database, tables and fields,
Relational databses design : Functional Dependencies, decompostion, 1NF, 2NF, 3NF,and BCNF
Structured Query Language (SQL)

1. Statistical analysis using standard package

   Linear Regression and Correlation: Introduction, Fitting lines, confidence label, Analysis of residuals, nonlinear regression. Studies of this parameter through computer package.

2) Computer aided drug design:- A preliminary approach to QSAR and combinatorial chemistry,
3) Use of database management system (DBMS) in clinical drug interaction and drug information services.

Practical

Computer application in Pharmaceutical Technology

Paper Code :PT 691A,
Contact : 3
Credit : 2

Exercise based on topics like :

1. Creating and modifying table with Oracle, querying with SQL
2. Quantitative structure activity relationship
3. Data base system and use of this system using FOXPRO or Microsoft Access in clinical drug interaction and drug information services

Advanced Bio-technology
[PT 610 B]

1. Introduction & historical background

a) Scientific & Technological foundations
b) Micro & nano-technology for medicine

2. Bio-technology & Medicines

a) Vitamins b) Steroids
c) Amino acid d) Proteins
e) Antibiotics f) Natural compounds
a) Gene farming
i) Animals
i) Plants

3. Recombinant DNA Technology

a) Concept
b) Cutting and rejoining of DNA
c) DNA segregating
d) PCR in gene amplification
e) Isolation and amplification of gene

4. Bio-informatics

a) Molecular pharmaceutical biotechnology
Moral and ethical questions (safety – medical, biological, chemical)

PRACTICAL [PT 691B]

1. Protein separation by gel eletrophoresis
   a) Assembling of Electrophoresis apparatus
   b) Gel casting
   c) Loading of proteins in the gel and separation according to molecular weight
   d) Staining of protein bands in the gel.

2. Microtechnique : Preparation of animal tissue sections for histological / histopathological / immunocytochemical studies
3. Estimation of hormone concentration from blood serum by immunoassays like ELISA
5. Extraction of
   (a) total RNA]
   (b) DNA] from tissue extracts
   (c) Protein]
6. Spectrophotometric assay of enzymes
7. Estimation of
   (a) Serum Glutamate Oxaloacetate Transaminase (SGOT) Test
   (b) Serum Glutamate Pyruvate Transaminase (SGPT) Test
   (c) Protein with standard curve by Ninhydrine method

SEMESTER-VII

Packaging Technology (Elective –II)

Code: **(PT 709A)**
Contact : **3**
Credit : **3**

1. Packaging of pharmaceutical dosage form
   a. Introduction, Definition and function, regulatory requirement, Nature of package evaluation
   b. Packaging of solid oral dosage form : scope, Packaging, stability and shelf life containers and Closures, Unit dosage packaging.
   c. Packaging of parenteral and ophthalmic: scope, regulatory requirements, containers, Closures.
   d. **Packaging of semisolids and topicals: scope, Closures and containers for different liquid and semisolid formulations, transdermal devices.**
   e. Packaging of aerosols: scope, pressurized containers, metered dose inhalers, non- pressurized containers, spray pumps, drug powder inhalers.
   f. Influence of packaging components on dosage form stability.
1. Packaging materials science
   a. Glass packaging materials - containers and Closures
   Glass as a packaging material, composition, types, manufacture of glass.
   b. Plastic packaging materials - containers and Closures
   Introduction, methods of preparation, classification of materials, Drug-plastic considerations, Selection of proper materials, drug plastic considerations, selection of proper materials.
   c. Metal packaging materials - containers and Closures
   Introduction, Modern packaging metal, Tinplate and associated materials aluminum, Types of metal containers.

2. Tamper – Resistant packaging
   Introduction, Film Wrapper, Blister package, strip package, Bubble pack, Shrink bonding, foil, paper of plastic pouches, bottle seals, tape seals, breakable caps, sealed tubes, aerosol containers, sealed containers.
3. Quality control and storage of packaging materials.
4. Designing packages for disposability (Wastage control)

Pharmaceutical Marketing Management (Elective-II)

Code: **[709 C]**
Contact : **3 hrs. / week**
Credit : **3**

Understanding of Pharmaceutical Marketing Management
Defining Marketing

ii) Marketing Task – Demand States & Marketing task, Scope of Marketing, Different Markets.

iii) Concept of Marketing – Definition of marketing, Distinction between marketing & Selling, Core Marketing Concept, Marketing Place, Marketing Space, Target Market, Segmentation of Market, Needs, wants & Demands, Product offering, value & satisfaction, Relationship net work, Supply chain competition, Marketing Environment, Marketing Mix (4 P Components), Other concept's name under marketing activities.

Marketing Opportunities

1) Market Oriented Strategic Planning – SWOT Analysis, Stragic Formulation, Product Planning,
2) Gathering Information & Measuring Demand – MIS, Market Research, Behavioural Research, Marketing Research, Forecasting & Demand Measurement.
3) Analysing Consumer Markets & Buyer Behaviour – Influencing Buyer Behaviour, Buying Decision Process, Motivation of Physician towards Brand.
4) Dealing With the Competition - Identifying Competitors, Analysing Competitors, Strategies, Strength & Weakness. Designing Competitive Strategies.

Developing Market Strategies & Marketing Mix, Product Strategy

1) Positioning & Differentiating the Market Offering (Product) - Positioning to Promote,
2) Product Life Cycle marketing Strategies- Product Life Cycle
3) New Market Offering – Which markets to Enter, How to Enter the Market, Product Development, Market Testing.
4) Setting the Product Strategy – Product & Product Mix., Product Line analysis, Brand Decision, Packaging & Labeling.

Managing & Delivering Marketing Programs

1) Value Net- Work & Marketing Channels – Channel Functions, Channel Levels, Channel Management, Decisions, Selecting, Training, Motivating & Evaluating Channels Members, Channel Dynamics, Conflicts, Co- operation & Competitions.
2) Managing Retailing, Wholesaling & Market Logistics - Types of Retailing, Types of Wholesaling.
3) Managing Advertising, Sales Promotion & Public Relations - Advertising Objective, Choosing the Advertising Message, Measuring Effectiveness of Advertisement. Sales Promotion & Purpose, Public Relations.
4) Managing Sales Force- Recruitment & Selecting Representative, Training sales Representative, Supervising, Norms for Customer Calls, Motivating Sales representative, Evaluating Sales representative.

Elective - II
Advanced Pharmacognosy

Paper code : 709B
Contact - 3 period / week
Credit : 3

1. Indigenous systems of medicines with emphasis on Ayurveda.
2. Some important techniques associated with quality control of Herbal Drugs :-
    a. Adulteration & deterioration
    b. Factors affecting Herbs quality
    c. TLC / HPTLC
    d. Sampling procedures
    e. Morphological examination
    f. Microscopical evaluation
    g. Chemical evaluation

3. Pharmacological Screening of herbal drugs.
4. Quality assurance & stability testing of herbal drugs.
5. Extracrion of herbal drugs
    a. Basic principle
    b. Preextraction operation for crude drugs
    c. Effect of solvent, solvent mixture & solution of extraction
    d. Procedure of extraction

e) Treatment of dry residue after extraction

INSTRUCTIONS

1. Each Semester will consist of a minimum of 15 weeks instructions :
2. Internal assessment of Theoreticals (30%) will be based on two class tests of 10 marks in each of the theory subject during each semester and 10 marks for class attendance of student in each subject.
3. Internal assessment of practicals (40%) will be based on day to day attendance, viva, laboratory record etc. There will be no separate class test in practicals. The choice in question papers shall be restricted to 25% only. Complete coverage of prescribed syllabus in university question papers is desired.
4. A minimum of 75% attendance in theory and practical classes is compulsory.
5. In view of the fact that B. Pharm is a professional degree course with diverse employment potential, the university degree certificate may continue to remain the same with no mention of elective subjects. However, the mark-list should indicate the elective(s) opted by the candidate.
6. Pass mark in both theory and practical papers is as per WBUT norms.
7. Pass mark in aggregate will be as per W.B.U.T. norms.
8. Class / Division awarded to the student will be decided as per WBUT norms.
9. Student has to clear back paper(s), if any, of 1st and 2nd Semester before appearing in the 5th Semester Examination and the same of 3rd and 4th Semester before appearing in the 7th Semester Examination.
10. A student will get a maximum of 8 yrs. time from the date of admission to complete the degree course.
11. Practical examination is essential as per PCI norms :

    iii) Sessional : 40

    iv) Practical examination : 60

12. Presence of External Examiner in Practical examinations is mandatory.

ANNEXURE TO PART B-5

Participation details of faculty members in Quality Improvement Programme				
Name	**Designation**	**Venue**	**Duration**	**Topic**
Dr. Gopa Roy Biswas	Assistant Professor	Department of Pharmaceutical Technology, Jadavpur University, Kolkata-700032	8th January, 2014 - 21st January, 2014 (TWO WEEKS)	New Insights into Diseases and Recent Therapeutic Approaches
Mr. Supriya Mana	Assistant Professor			
Mr. Samit Bera	Assistant Professor			

No. of Publication	YEAR OF PUBLICATION	TITLE	JOURNAL NAME
2	**2012-13**	Combination therapy of dexamethasone with epigallocatechin enhances tibiotarsal bone articulation and modulates oxidative status correlates with cartilage cytokines expression in the early phase of experimental arthritis.	European Journal of Pharmacology, 698, 444-454.
		A novel combination of methotrexate and epigallocatechin attenuates the over expression of pro-inflammatory cartilage cytokines and modulates antioxidant status in adjuvant arthritic rats.	Inflammation, 35, 1435-1447.
1		Phytochemial investigation and evaluation of anthelmintic activities of V. Negundo leaf extract.	International Journal of Research in Pharmaceutical and Biomedical Sciences. 3,
2		Anticonvulsant Activity of Diospyros cordifolia Bark Against Experimentally Induced Convulsions in Swiss Albino Mice.	Pharmacologia, , 3(7): 196-199,2012. ISSN 2044-4648/DOI:10.5567
		Comparative Antibacterial study of Barleria prionitis Linn. Leaf Extracts.	International Journal of Pharmaceutical & Biological Archives 2012; 3(2): 391-393, ISSN 0976-3333
5		Flurbiprofen loaded solid lipid nanoparticles, formulation and Optimization by using response surface methodology.	Int J Pharm Pharm Sci ISSN 0975-1491, 2012, 4(5), 103-108.
		Formulation development and optimization of bi-layer tablets of aceclofenac.	July Expert Opin. Drug Deliv. 2012, 1041-50, 9(9). (IF 4.896)
		Phytochemical Screening Of A Polyherbal Extract And Its Anticancer Potential.	2012, JCPS, 2(5),46-51.
		Effect of statins on normal and glucose induced cataract in goat lens.	IJPPS. 2012, 4(3), 636-638.
		Nanostructured Lipid Carriers (NLC) Based Gel for Topical Delivery of Aceclofenac: Preparation, Characterization and in-vivo evaluation.	Sci Pharm. 2012; 80: 749–764.
1		Enhancing the buccoadhesive potential of a cellulose derivative by a plant derived gum, gum karaya.	LAP LAMBERT ACADEMIC PUBLISHING GMBH AND CO. KG. 2012
1		Insight into natural gums as release modulators-Design of modified release drug delivery systems.	LAP LAMBERT Academic Publishing GmbH & Co. KG. 2012
1		Magnetic microspheres: a latest approach in novel drug delivery system.	Journal of Pharmaceutical and Scientific Innovation, 1, 21-25.
1		Understanding type 1 diabetes: etiology and models.	Canadian Journal of Diabetes, 37, 269-276.
2		Laboratory manual for pharmaceutical Technology and Biopharmaceutics experiments.	2013, CBS Publishers Pvt Ltd
		Prospects of iontophoresis in cardiovascular drug delivery.	Journal of Basic and Clinical Pharmacy, 4: 25.

No. of Publication	YEAR OF PUBLICATION	TITLE	JOURNAL NAME
4	2013-14	Exploring plant lectins in diagnosis, prophylaxis and therapy.	Journal of Medicinal Plants Research, 7, 3444-3451.
		High-functionality excipient promotes drug release from tablet. Indian Conference on Applied Mechanics (INCAM) .	2013. (ISBN 978-93-5137-273-8).
		Negative Feedback Effect in HIV Progression: An Optimal Control Theoretic Approach.	Journal of Algorithms and Optimization 1(1) 1-12(2013).
		Feedback effect in bidirectional disease transmission in cutaneous leishmaniasis.	American Journal of Mathematics and Sciences. 2, 85-93.
1		Modification of release kinetics of a model drug from HPMC based matrix patches.	Indian Conference on Applied Mechanics (INCAM). 2013. (ISBN 978-93-5137-273-8).
4		Treatment with ferulic acid to rats with streptozotocin-induced diabetes: effects on oxidative stress, pro-inflammatory cytokines, and apoptosis in the pancreatic β cell.	Endocrine, 44, 369-379.
		Combination therapy of dexamethasone with epigallocatechin enhances tibiotarsal bone articulation and modulates oxidative status correlates with cartilage cytokines expression in the early phase of experimental arthritis.	Eur J Pharmacol. 2013 Jan 5; 698(1-3):444-54. doi: 10.1016/j.ejphar.2012.11.004.
		Ferulic acid in the treatment of post-diabetes testicular damage: relevance to the down regulation of apoptosis correlates with antioxidant status via modulation of TGF-β1, IL-1β and Akt signalling.	Cell Biochem Funct. 2013 May 10. doi: 10.1002/cbf.2983.
		Naringenin attenuates testicular damage, germ cell death and oxidative stress in streptozotocin induced diabetic rats: naringenin prevents diabetic rat testicular damage.	Journal of Applied Biomedicine, 11, 195-208.
7		Comparative evaluation of total flavonoid content and antioxidant activity of methanolic root extract of Clerodendrum infortunatum and methanolic whole plant extract of Biophytum sensitivum.	International Journal of Pharmaceutical Sciences Review and Research, 22, 62.
		Formulation and evaluation of antimicrobial topical semisolid dosage form containing whole plant extract of Biophytum sensitivum.	JPR: BioMedRx: An International Journal; 2013,1(7),641-646.
		Formulation and evaluation of antidiabetic tablet containing whole plant extract of Biophytum Sensitivum on the basis of total flavonoid content.	World Jour. Pharm. Res.; 2013, 2(4), 986-1007.
		Estimation of total flavonoid content (TFC) and anti oxidant activities of methanolic root extract of Clerodendrum Infortunatum Linn.	Jour. Harmo. Res. Pharm., 2013, 2(2), 91-99.

No. of Publication	YEAR OF PUBLICATION	TITLE	JOURNAL NAME
		Comparative Evaluation of Total Flavonoid Content and Antioxidant Activity of Methanolic Root Extract of Clerodendrum infortunatum and Methanolic Whole Plant Extract of Biophytum sensitivum.	Int. J. Pharm. Sci. Rev. Res., 22(1), Sep – Oct 2013; 13, 62-66.
		Quantification of Total Flavonoid Content and antioxidant activity in comparison to a reference flavonoid as in vitro quality evaluation parameter for assessing bioactivity of biomarkers in herbal extracts or formulations.	JPR:BioMedRx: An International Journal 2013,1(8),757-766.
		Estimation of total flavonoid content (tfc) and anti oxidant activities of methanolic whole plant extract of Biophytum Sensitivum Linn.	Journal of Drug Delivery & Therapeutics; 2013, 3(4), 33-37.
2		Evaluation of antimicrobial potentiality of a flavonoid isolated from the leaf of the plant *Colebrookea oppositifolia.*	International Journal of Biological & Pharmaceutical Research, 4,225—230.
		Experimental studies on synergism between Meropenem and Sulbactam.	African Journal of Microbiology Research, 7 (24), 3461-3465, 2013
2		Topical Delivery of Aceclofenac as Nanoemulsion Comprising of Excipients Having Optimum Emulsification Capabilities: Preparation, Characterization and In Vivo Evaluation.	Expert Opin. Drug Deliv. Vol. 10, No.4, Pages 411-420. April 2013
		Solid Lipid Nanoparticles (SLNs) Gels for Topical Delivery of Aceclofenac In Vitro and In Vivo Evaluation.	Current Drug Delivery. 2013 Dec;10(6):656-66.
1		Pharmacognostic Profiling and Pharmacological Screening of Zanthoxylum Acanthopodium DC – A Sub-Himalayan Shrub of Ethnomedicinal Value.	American Journal of PharmTech Research 2013. ISSN: 2249-3387.2013.3(3): 712-720.
2		Experimental studies on synergism between Meropenem and Sulbactam.	African Journal of Microbiology Research, 7, 3461-3465.
		Edible vaccines from gm crops: current status & future scope.	Journal of Pharmaceutical and Scientific Innovation, 2, 1- 6.
1		In vitro & in vivo Studies on Lornoxicam Loaded Nanoemulsion Gels for Topical Application.	Current Drug Delivery, 11, 132-138.
2		In-vivo Screening of Ethanolic Extract of Biophytum sensitivum DC Leaves on Peptic Ulcer Induced by Aspirin in Wistar Albino Rats.	International Journal of Pharmacognosy and. Phytopharmacology. 3,418-422.
		Comparative Bioequivalence Study of Different Brands of Telmisartan Tablets Marketed in India by Dissolution Modeling and Quality Control Tests.	International. Journal of Pharmacognosy and . Phytopharmacology. 3, 460-468.

No. of Publication	YEAR OF PUBLICATION	TITLE	JOURNAL NAME
1	**2014-15**	Ferulic acid in the treatment of post-diabetes testicular damage: relevance to the down regulation of apoptosis correlates with antioxidant status via modulation of TGF-β1, IL-1β and Akt signalling.	Cell Biochemistry and Function, 32, 115-124
3		Fabrication and characterisation of plant mucilloid-based non-effervescent expandable gastroretentive drug delivery system.	Latin American Journal of Pharmacy, 33, 1357-1362.
		Unearthing the Complexities of Mathematical Modeling of Infectious Disease Transmission Dynamics" in Trends in Infectious Diseases, edited by Shailendra K. Saxena	ISBN 978-953-51-1312-6, InTech Open Access (2014)
		Concerted approach in designing tailormade nasal vaccines: emphasis on Immunomodulation and immunostimulation	IJDFR , 5(2), 1-23, 2014.
6		Development and evaluation of buccal mucoadhesive patches of diclofenac potassium.	International Journal of Pharmaceutical Sciences Review and Research., 29, 111-115.
		Discriminating power of dissolution medium in comparative study of solid dispersion tablets of Biopharmaceutics Classification System class 2 drug.	African Journal of Pharmacy and Pharmacology, 8, 408-412.
		HPMCK4M and gum karaya: influence on release mechanism of carvedilol phosphate from buccoadhesive tablets.	World Journal of Pharmaceutical Research, 3, 850-861.
		Gum Karaya : A release modifier employed in the formulation of matrix granules containing amoxicillin trihydrate as a model drug.	International Journal of Research in Pharmaceutical Sciences, 5, 124-131.
		Exploring the Effect of Polyox on the Release Kinetics of a Model Antihypertensive Drug from a Cellulose Derivative Based Buccal Patch.	RRJPPS, Volume 3, Issue 2, pp 24-31, 2014.
		Insight into the Release kinetics of Amoxicillin trihydrate from Buccoadhesive tablets with a Natural gum.	RJPBCS 5(3) Page No. 772-786, 2014
1		Evaluation of the Synergistic Potential of the Combination of an Opioid and Non-Opioid Analgesic in Experimental Models of Pain.	Research Journal of Pharmaceutical, Biological and Chemical Sciences , RJPBCS 5(3) Page No.2079 May-June 2014.