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"CELEBRATING DREAMS"

Date: 04-07-2022

Minutes of Seventh Board of Studies Meeting of School of Pharmacy for Bachelor of Pharmacy Course

The Seventh BoS meeting of School of Pharmacy, for Bachelor of Pharmacy was held on 04/07/2022 in the presence of committee members.

The following members were present:-

1. Prof. Balakumar Chandrasekaran – Chairman
2. Prof. Subodh kumar Dubey – Senior Member
3. Mr. Shivam Tayal - Member
4. Mr. Hero Khan Pathan - Member
5. Mr. Anurag Agrawal - Member
6. Mr. Neeti Kumar Jain - Member
7. Mr. Shailendra Narwariya - Member
8. Mrs. Divya Niranjan - Member
9. Mrs. Priyanka Keshri - Member
10. Prof.Sanjay K Jain, Department of Pharmaceutical Sciences, Dr.Harisingh Gour Vishwavidyalaya, Sagar – External Expert.

The Chairman-BoS welcomed Prof. S. K. Jain, an external expert and other members to the meeting and introduced agenda which were to be discussed.

Agenda 1. "To discuss the implementation of online certification courses like SWAYAM-MOOC into the B. Pharm 6th to 8th semesters"

This agenda was submitted to Prof. S. K. Jain sir and he suggested that students may get registered separately for this online certification course (it has 4 credit points). As such Pharmacy Council of India has not prescribed the online certification course in B Pharmacy Syllabus. Prof. Balakumar showed the current scheme of the School of Pharmacy-ITM University and explained that from 1st to 4th semesters consist of 'fine arts/music' and from 6th to 8th semesters consist of 'Online certification courses related to Pharmacy' as non-university exams with credit limit of 4. It was also mentioned in the scheme of ITM University that 'Not attaining any credits or failing in this course will not affect the award of Degree'.

Prof. S. K. Jain sir advised that in the final year, semesters 7 and 8, we can avoid the online certification courses. Third year B Pharm students (5th and 6th semesters) can register for the online course and must complete within the duration, provided that the time-line of MOOC courses or other online certification courses need to be taken care.

We updated the above points by removing the online certification courses in 7 and 8th

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semesters of B Pharm syllabus. We have included online certification course in 3rd and 4th semesters of B Pharm as optional.

Agenda 2. "To discuss the schemes and confirmation of examinations."

Prof. S. K. Jain sir suggested to get confirmation from the examination authority/Controller of Examinations of ITM University and also to look for additional points from RGPV syllabus.

Agenda 3. "To discuss the implementation of NCC courses with 24 credits including camp of 10 credits."

As per the NAAC criteria, it was suggested to have NCC course for the students those who are interested in NCC activities. Hence, this agenda was opened for a discussion with Prof. S. K. Jain sir, external expert, he feels that 24 credit is heavy for the pharmacy students and students need to devote 360 hours within 3 years of duration i.e. 120 hrs/year which may create difficulties to pharmacy students. So, it is ideal to keep NCC course as an optional and if students are interested in NCC, then they may be allowed to join NCC course and complete their assigned credits. Thus, keeping NCC as a separate entity, other items such as fine arts, humanities, music and MOOC course or online certification course can be collected into one Basket

The Expert advised that a certificate course of NCC with 2 or 4 credits can be designed and included as a separate subject in consultation with NCC co-ordinator of ITM University and examination authority.

Agenda 4. "To discuss Practice School or Industrial Training or both to be conducted in 7th semester of B. Pharm."

In the PCI prescribed scheme, the paper 706PS - Practice School was mentioned, hence the following components such as industrial training, hospital training, community pharmacy centre can be incorporated.

Agenda 5. "Inclusion of Elective subjects in 7th semester of B. Pharm."

As per the recommendation of the Board of Studies (BoS) committee, the following elective papers are proposed for incorporation into 7th semester of B Pharm.

BP707ET - Pharmaceutical Product Development: to Focus on the processes involved in developing pharmaceutical products from conception to market.

BP708ET - Introduction to Intellectual Property Rights: Overview of intellectual property laws relevant to the pharmaceutical industry, including patents and copyrights.

BP709ET - Artificial Intelligence in Pharmaceutical: Exploration of AI applications in drug discovery, development, and marketing, emphasizing innovative technologies.

BP710ET - Good Manufacturing Practice in Pharma: Detailed study of the regulations and guidelines that ensure quality and safety in pharmaceutical manufacturing processes.

❖ **Syllabus of these new courses and approved courses are attached in annexure I**

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Agenda 6. "Guidelines for Project work in B. Pharm 8th semester"

As per the recommendation of BOS committee, the relevant guidelines mentioned in the PCI syllabus as adopted for project work BP813PW with certain amendments and inserted in the syllabus.

Agenda 7. "Other relevant discussion"

Committee was formed to review and recommend curriculum changes for the next academic year.As no other points were discussed, the meeting ended with a vote of thanks to external expert and members as well.

Members:-

Prof. Balakumar Chandrasekaran – Chairman

Prof. Sanjay K Jain External Expert

Prof. Subodh Kumar Dubey - Senior Member

Mr. Shivam Tayal – Member

Mr. Hero Khan Pathan - Member

Mr. Anurag Agrawal – Member

Mr. Nem Kumar Jain - Member

Mr. Shailendra Narwariya-Member

Mrs. Divya Niranjan - Member

Mrs. Priyanka Keshri - Member

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Annexure – 1
New Course
in 7th Semester

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Syllabus-2022-2023

(SOP)(BPharm)

Title of the Course	Pharmaceutical Product Development
Course Code	BP707ET

Part A

Year		**Semester**		**Credits**	L	T	P	C
					3	1	0	4
Course Type	Theory only							
Course Category	Skill Enhancement Courses							
Pre-Requisite/s				**Co-Requisite/s**				
Course Outcomes & Bloom's Level	**CO1-** To recall the formulation development of different types of dosage forms**(BL1-Remember)** **CO2-** To outline the role of different pharmaceutical excipients in product development**(BL2-Understand)** **CO3-** To select the excipients for a specific drug product**(BL5-Evaluate)** **CO4-** To classify different of packaging for the drug product and materials used for primary and secondary packaging.**(BL3-Apply)** **CO5-** To choose optimization technique in the development of pharmaceutical drug product **(BL4-Analyze)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation) SDG8(Decent work and economic growth) SDG17(Partnerships for the goals)					

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Part B

ules	Contents	Pedagogy	Hours
JNIT 1	Introduction to pharmaceutical product development, objectives, regulations related to preformulation, formulation development, stability assessment, manufacturing and quality control testing of different types of dosage forms	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	10
JNIT 2	An advanced study of Pharmaceutical Excipients in pharmaceutical product development with a special reference to the following categories i. Solvents and solubilizers ii. Cyclodextrins and their applications iii. Non - ionic surfactants and their applications iv. Polyethylene glycols and sorbitols v. Suspending and emulsifying agents vi. Semi solid excipients	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	10
JNIT 3	An advanced study of Pharmaceutical Excipients in pharmaceutical product development with a special reference to the following categories i. Tablet and capsule excipients ii. Directly compressible vehicles iii. Coat materials iv. Excipients in parenteral and aerosols products v. Excipients for formulation of NDDS Selection and application of excipients in pharmaceutical formulations with specific industrial applications	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	10
JNIT 4	Optimization techniques in pharmaceutical product development. A study of various optimization techniques for pharmaceutical product development with specific examples. Optimization by factorial designs and their applications. A study of QbD and its application in pharmaceutical product development.	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	08
JNIT 5	Selection and quality control testing of packaging materials for pharmaceutical product development- regulatory considerations.	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	07

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Evaluation of suspending and emulsifying agent	Experiments	BL5-Evaluate	5

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Part D(Marks Distribution)

Theory

Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	50	75	38	25	13

Practical

Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation

Part E

Books	1. Pharmaceutical Statistics Practical and Clinical Applications by Stanford Bolton, Charles Bon; Marcel Dekker Inc. 2. Encyclopedia of Pharmaceutical Technology, edited by James Swarbrick, Third Edition, Informa Healthcare publishers. 3. Pharmaceutical Dosage Forms, Tablets, Volume II, edited by Herbert A. Lieberman and Leon Lachman; Marcel Dekker, Inc.
Articles	https://www.ema.europa.eu/en/documents/scientific-guideline/note-guidance-pharmaceutical-development_en.pdf
References Books	1. Aulton's Pharmaceutics – The Design and Manufacture of Medicines, Michael E. Aulton,3rd Ed. 2. Remington – The Science and Practice of Pharmacy, 20th Ed. 3. Pharmaceutical Dosage Forms – Tablets Vol 1 to 3, A. Liberman, Leon Lachman andJoseph B. Schwartz
MOOC Courses	https://www.coursera.org/courses?query=pharmaceutical
Videos	https://www.youtube.com/watch?v=sesDthMPRC0&list=PLkxD16eG21tVre8GBj-LbjfUUuq1qghVM

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
CO1	3	1	1	3	1	-	-	-	-	-	3	-	2	1	1
CO2	3	1	1	3	1	-	-	-	-	-	3	-	1	-	1
CO3	2	1	1	2	1	-	-	-	-	-	2	-	1	2	2
CO4	2	1	1	2	1	-	-	-	-	-	2	-	2	1	1
CO5	2	1	1	1	1	-	-	-	-	-	-	-	1	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Syllabus-2022-2023

(SOP)(BPharm)

Title of the Course	Introduction to intellectual property rights
Course Code	BP708ET

Part A

Year		**Semester**		**Credits**	L	T	P	C
					3	1	0	4
Course Type	Theory only							
Course Category	Skill Enhancement Courses							
Pre-Requisite/s			**Co-Requisite/s**					
Course Outcomes & Bloom's Level	**CO1-** To create awareness of IPR among pharmacy students.**(BL2-Understand)** **CO2-** To make the pharmacy students aware about the pharmaceutical R & D and the activities therein.**(BL2-Understand)** **CO3-** Develop the understanding of the Intellectual Property Rights necessary for research activities in the pharmaceutical industry.**(BL3-Apply)** **CO4-** To know the database of intellectual property and TKDL**(BL2-Understand)** **CO5-** To apply the Knowledge of IPR in drafting and fillng of IPR**(BL3-Apply)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	**SDG (Goals)**	SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation) SDG8(Decent work and economic growth) SDG17(Partnerships for the goals)					

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Part B

ules	Contents	Pedagogy	Hours
JNIT 1	The pharmaceutical business and The pharmaceutical R & D	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	10
JNIT 2	Module 3 – Intellectual Property Rights: Introduction about patents, copyright, trademark, Industrial Designs,Geographical Indications, Trade Secrets, Module 4 – IPR: With specific reference to pharma	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	10
JNIT 3	IPR: Indian patent scenario and Patent commercialization and licensing	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	10
JNIT 4	Patent drafting and Patent searches, patent filing, registration, granting World Intellectual Property Organization (WIPO) and its functions	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	08
JNIT 5	IP in Traditional Knowledge, TKDL database in medicinal plants, INDIAN WEB-PORTALS FOR PATENTS AND TECHNOLOGIES	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	07

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	patent drafting and filing	Case Study	BL3-Apply	5

Part D(Marks Distribution)

Theory

Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	50	75	38	25	13

Practical

Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation

Part E

Books	Cockburn IM. Intellectual property rights and pharmaceuticals: challenges and opportunities for economic research. The economics of intellectual property. 2009 Jan:150.
Articles	Savale SK, Savale VK. Intellectual property rights (IPR). World J Pharm Pharm Sci. 2016 Apr 22;5:2559-92.
References Books	Prabu SL, Tnk S, editors. Intellectual property rights. BoD–Books on Demand; 2017 Jun 21.
MOOC Courses	NEPTEL
Videos	NA

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Course Articulation Matrix

/s	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
CO1	-	2	-	1	-	-	-	3	-	2	3	-	1	1	1
CO2	-	1	-	-	-	-	-	3	-	-	2	-	1	-	1
CO3	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	-	-	2	-	-	2	-	-	-	-
CO5	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Syllabus-2022-2023

(SOP)(BPharm)

Title of the Course	Artificial intelligence in Pharmaceutical
Course Code	BP709ET

Part A

Year		Semester		Credits	L	T	P	C
					3	1	0	4
Course Type	Theory only							
Course Category	Skill Enhancement Courses							
Pre-Requisite/s				Co-Requisite/s				
Course Outcomes & Bloom's Level	CO1- Acquire an in-depth comprehension of AI applications in pharmaceutical domain. (BL2-Understand) CO2- Recognize and counter prevalent myths associated with AI.(BL2-Understand) CO3- Implement AI in real-life pharmaceutical use cases without the need for coding.(BL3-Apply) CO4- To gain the knowlege of AI and how to implement in healthcare(BL3-Apply) CO5- AbilitTo apply time-series forecasting for healthcare applications(BL3-Apply)							
Coures Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗		SDG (Goals)		SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG8(Decent work and economic growth) SDG17(Partnerships for the goals)			

Part B

Modules	Contents	Pedagogy	Hours
UNIT 1	Introduction, Steps in AI, How Its Work Examples	Lecture based learning, Interactive class, Peer tutorial, Class using ICT tool/PPT/white board	8
UNIT 2	Applications of AI in Pharma Industry	Lecture based learning, Interactive class, Peer tutorial, Class using ICT tool/PPT/white board	5
UNIT 3	Predictive Analytics for Patient Outcomes, Treatment Plan	Lecture based learning, Interactive class, Peer tutorial, Class using ICT tool/PPT/white board	8
UNIT 4	Natural Language Processing, Chatbots	Lecture based learning, Interactive class, Peer tutorial, Class using ICT tool/PPT/white board	5
UNIT 5	Using AI for Early Drug Discovery: From Small Molecules to Biologics	Lecture based learning, Interactive class, Peer tutorial, Class using ICT tool/PPT/white board	8

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Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Remote Patient monitring	Simulation	BL3-Apply	5

Part D(Marks Distribution)

Theory

Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	50	75	38	25	13

Practical

Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation

Part E

Books	Harrer S, Menard J, Rivers M, Green DV, Karpiak J, Jeliazkov JR, Shapovalov MV, del Alamo D, Sternke MC. Artificial intelligence drives the digital transformation of pharma. InArtificial Intelligence in Clinical Practice 2024 Jan 1 (pp. 345-372). Academic Press.
Articles	Patel J, Patel D, Meshram D. Artificial Intelligence in Pharma Industry-A Rising Concept. Journal of Advancement in Pharmacognosy. 2021;1(2).
References Books	Bhupathyraaj M, Rani KR, Essa MM, editors. Artificial Intelligence in Pharmaceutical Sciences. CRC Press; 2023 Nov 23.
MOOC Courses	Udemy, coursera, NEPTEL
Videos	YOU TUBE

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
CO1	1	3	-	3	3	-	-	-	-	-	3	-	2	1	2
CO2	1	1	1	2	2	-	-	-	-	-	3	-	1	1	2
CO3	1	3	-	1	3	-	-	-	-	-	3	-	1	1	1
CO4	1	2	1	1	2	-	-	-	-	-	2	-	1	-	1
CO5	-	1	1	1	2	-	-	-	-	-	2	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Syllabus-2022-2023

(SOP)(BPharm)

Title of the Course	Good Manufacturing in Pharma
Course Code	BP710ET

Part A

Year		Semester		Credits	L	T	P	C
					3	1	0	4
Course Type	Theory only							
Course Category	Discipline Specific Elective							
Pre-Requisite/s			Co-Requisite/s					

Course Outcomes & Bloom's Level	CO1- Meaning and importance of GMP in the manufacturing and pharmaceutical industries. (BL1-Remember) CO2- General and specific requirements for documentation and records (BL2-Understand) CO3- The role of Production, Quality Control (QC), Quality Assurance (QA) and the Qualified Person (QP) in GMP (BL3-Apply) CO4- To apply the GMP certification in industry (BL3-Apply) CO5- To learn the documentation and GMP SOPs (BL3-Apply)		
Coures Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✓	SDG (Goals)	SDG1(No poverty) SDG3(Good health and well-being) SDG4(Quality education) SDG6(Clean water and sanitation) SDG8(Decent work and economic growth) SDG12(Responsible consuption and production) SDG17(Partnerships for the goals)

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Part B

Modules	Contents	Pedagogy	Hours
JNIT 1	Introduction What is Good Manufacturing Practice? Why is GMP important? Official GMP Directives. the basic requirements of Good Manufacturing Practice., Pharmaceutical Quality System Principle and overview of the Pharmaceutical Quality System. Major updates. Development, content and implementation of PQS.	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	8
JNIT 2	Personnel Key personnel. Background and duties of the Qualified person. Duties of the Head of production department. Duties of the Head of quality control. Person releasing the batch. Consultants. Personnel training and hygiene, Premises and Equipment Production area. Storage area. Quality control areas. Ancillary areas. Equipment.	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	8
JNIT 3	Documentation Premises. Generation and control of documentation. Types of documents and specifications. Manufacturing formula and processing instructions. Packaging instructions. Procedures and records., Production General principles. Prevention of cross-contamination in production. Guidelines for starting materials. Processing operations. Packaging materials and operations. Guidelines for finished products.	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	8
JNIT4	Quality Control General principles. Main tasks of the Quality control department. Technical transfer of testing methods. Transfer protocol., Complaints and Recalls GMP Guidelines related to complaints. Classification of defects. Product Recalls.	Lecture based learning, interactive class, Peer tutorial, Class using ICT tool/PPT/white board	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	GMP	Seminar	BL3-Apply	2

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Theory

Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	50	75	38	25	13

Practical

Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation

Part E

Books	Karmacharya JB. Good manufacturing practices (GMP) for medicinal products. Promising Pharmaceuticals. 2014;101.
Articles	Patel KT, Chotai NP. Pharmaceutical GMP: past, present, and future–a review. Die Pharmazie-An International Journal of Pharmaceutical Sciences. 2008 Apr 1;63(4):251-5.
References Books	Durivage MA, editor. The Certified Pharmaceutical GMP Professional Handbook. Quality Press; 2016 May 23.
MOOC Courses	UDEMY, COURSERA, PHARMASTATE ACADEMY
Videos	You tube

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO
CO1	3	-	-	-	1	-	1	1	2	-	3	-	1	1	1
CO2	1	-	-	1	1	-	1	1	2	-	3	-	1	1	1
CO3	1	-	-	-	1	-	2	1	2	-	3	-	2	1	1
CO4	2	-	-	1	1	-	1	2	2	-	2	-	1	-	3
CO5	1	-	-	1	1	-	2	2	2	-	2	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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