

# SELF ASSESSMENT REPORT (SAR) FORMAT UNDERGRADUATE PHARMACY PROGRAM FIRST TIME ACCREDITATION

(Applicable for all the programs, except those granted full accreditation for 5 years as per Jan 2013 Manual)

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#### **PART A: Institutional Information**

1.	Name and Address of the Institution:								
2.	Name and Address of the Affiliating University:								
3.	Year of Estab	lishment	of the In	stitution:					
4.	Type of the Ir	nstitutio	n:						
5.	University Deemed University Autonomous Affiliated Any Other (Pl Ownership St Central Govern State Govern Grant-in-Aid	ease spec atus: rnment	cify)						
6.	Self-financing Trust Society Section 25 Co Any Other (Pl Provide Deta Other Academ	ompany ease spec ails:	cify)	the Trust/S	ociety/etc., i	if any:			
	Name of the Institution(s)		Yea Establis		Programs o	of Study	Location		
7.	Details of all t	the prog	rams bein	g offered by	the Institut	ion under co	onsideration:		
S. No	Program Name	Year of Start	Intake	Increase in intake, if any	Year of increase	PCI/ AICTE Approval	Accreditation Status*		
1.									

#### \* Write applicable one:

- Applying first time
- Granted accreditation for two/three years for the period(specify period)
- Granted accreditation for 5/6 years for the period (specify period)
- Not accredited (specify visit dates, year)

- Withdrawn (specify visit dates, year)
- Not eligible for accreditation
- Eligible but not applied

**Note:** Add rows as needed.

#### 8. Programs to be considered for Accreditation vide this application:

S. No.	Program Name
1.	
N.	

#### 9. Total number of employees:

#### A. Regular\*Faculty and Staff:

		CAY		CAYm1		CAYm2	
Items		Min	Max	Min	Max	Min	Max
	М						
Faculty in Pharmacy	F						
	М						
Faculty in Sciences & Humanities	F						
	М						
Non-teaching staff	F						

<sup>\*</sup> **Note:** All the faculty whether regular or contractual (except Part-Time or hourly based), will be considered. The contractual faculty appointed with any terminology whatsoever, who have taught for 2 consecutive semesters with or without break between the two semesters in the corresponding academic year on full time basis shall be considered for the purpose of calculation in the Faculty Student Ratio. However, following will be ensured in case of contractual faculty:

- a. Shall have the PCI prescribed qualifications and experience.
- b. Shall be appointed on full time basis and worked for consecutive two semesters with or without break between the two semesters during the particular academic year under consideration.
- c. Should have gone through an appropriate process of selection and the records of the same shall be made available to the visiting team during NBA visit.

#### **CAY - Current Academic Year**

CAYm1- Current Academic Year minus1= Current Assessment Year

CAYm2 - Current Academic Year minus2=Current Assessment Year minus 1

**B.** Contractual Staff (Not covered in Table A):

		CAY		CAYm1		CAYm2	
Items		Min	Max	Min	Max	Min	Max
Faculty in Discussion	М						
Faculty in Pharmacy	F						
Faculty in Science & Humanities	М						

	F			
	М			
Non-teaching staff	F			

#### **10.** Total number of Pharmacy students:

Student Numbers	CAY	CAYm1	CAYm2
Total no. of boys			
Total no. of girls			
Total no. of students			

(Instruction: The data may be categorized in tabular form in case institute runs UG, PG and doctoral programs, Please prepare separate table for each level, if applicable)

#### 11. Vision of the Institution:

#### 12. Mission of the Institution:

13.	Contact Information of the Head of the Institution and NBA coordinator, i	f
	designated:	

uesi	gnateu:
i.	Name:
	Designation:
	Mobile No:
	Email id:
ii.	NBA coordinator, if designated:
	Name:
	Designation:
	Mobile No:
	Email id:

### **PART B: Criteria Summary**

Name of the p	program:
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Criteria No.	Criteria	Mark/Weightage						
	Program Level Criteria							
1.	Vision, Mission and Program Educational Objectives	50						
2.	Program Curriculum and Teaching –Learning Processes	150						
3.	Course Outcomes and Program Outcomes	100						
4.	Students' Performance	180						
5.	Faculty Information and Contributions	175						
6.	Facilities	120						
7.	Continuous Improvement	75						
	Institute Level Criteria							
8.	8. Student Support Systems							
9.	Governance, Institutional Support and Financial Resources	100						
	Total	1000						

NOTE: In the document wherever word 'Semester' has been used, same shall be read as 'Semester or Annual'. The Institutions may use appropriately whichever is applicable to them.

#### Self Assessment Report (SAR)

CRITERION 1	ision, Mission and Program Educational Objectives	50
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#### 1. Vision, Mission and Program Educational Objectives (50)

#### 1.1. State the Vision and Mission (5)

(Vision statement typically indicates aspirations and Mission statement states the broad approach to achieve aspirations.)

#### 1.2. State the Program Educational Objectives (PEOs) (5)

(State the Program Educational Objectives (3 to 5) of the program seeking accreditation)

### 1.3. Indicate where and how the Vision, Mission and PEOs are published and disseminated among stakeholders (15)

(Describe where (websites, curricula, posters etc.) the Vision, Mission and PEOs are published and detail the process which ensures awareness among internal and external stakeholders with effective process implementation)

(Internal stakeholders may include Management, Governing Board Members, faculty, support staff, students etc. and external stakeholders may include employers, industry, alumni, funding agencies, etc.)

#### 1.4. State the process for defining the Vision & Mission and PEOs of the program (10)

(Articulate the process for defining the Vision, Mission and PEOs of the program)

#### 1.5. Establish consistency of PEOs with Mission of the Institute (15)

# (Generate a "Mission of the Institute – PEOs matrix" with justification and rationale of the mapping)

PEO Statements	M1	M2	 Mn
PEO1:			
PEO2:			
PEO5:			

**Note:** M1, M2, ..., Mn are distinct elements of Mission statement. Enter correlation levels 1, 2 or 3 as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

It there is no correlation, put "-"

**Note:** In this document wherever the term 'Process' has been used its meaning is process formulation, notification and implementation.

CRITERION 2	Program Curriculum and Teaching -Learning
CRITERION 2	Processes

**150** 

#### 2. Program Curriculum and Teaching-Learning Processes (150)

#### 2.1. Program Curriculum (40)

# 2.1.1 Delivery of Syllabus Contents and compliance of the curriculum for attainment of POs (10)

(State the contents of the syllabus; about the course/learning material/content/laboratory experiments/projects etc. also mention identified curriculum gaps, if any)

**Note:** In case all POs are being demonstrably met through University Curriculum then 2.1.2 will not be applicable and the weightage of 2.1.1 will be 30.

# 2.1.2 State the delivery details of the contents beyond the Syllabus for the attainment of POs (20)

(Provide details of the additional course/learning material/content/laboratory experiments/projects etc., arising from the gaps identified in 2.1.1 in a tabular form in the format given below)

CAY

S.No.	Gap	Action taken	Date- Month-Year	Resource Person with designation	No. of students present	Relevance to POs	

#### CAYm1

S.No.	Gap	Action taken	Date- Month-Year	Resource Person with designation	No. of students present	Relevance to POs	

#### CAYm2

S. No.	Gap	Action taken	Date-Month- Year	Resource Person with designation	No. of students present	Relevance to POs

**Note:** Please mention *in detail* whether the Institution has given such inputs and suggestions to the Affiliating University regarding curricular gaps and possible addition of new content/add-on courses in the curriculum, to bridge the gap and to improve attain program outcome(s).

#### 2.1.3. Adherence to Academic Calendar (10)

(Demonstrate notified academic calendar & its adherence)

#### 2.2. Teaching-Learning Processes (110)

#### 2.2.1 Initiatives in teaching and learning process (25)

(Implemented teaching-learning process and Initiatives in improving instruction methods, using real world examples, collaborative learning, the quality of laboratory experiments with regard to conduct, record observations, analysis, Feedback collection process; collection, analysis and action taken etc. encouraging bright students, assisting weak students etc. The initiatives, implementation details and impact analysis need to be documented)

### Quality of internal semester question papers, assignments and evaluation(10)

(Mention the initiatives, implementation details and impact analysis related to quality assurance of semester question papers, assignments that encourage and empower the students to develop skills and higher orders of learning and evaluation)

#### **223** Quality of Students projects (15)

(Quality of the project is measured in terms of consideration to factors including, but not limited to, cost, type {application, product, research, review etc.} environment, safety, ethics and standards. Processes related to project identification, allotment, continuous monitoring, evaluation including demonstration of working prototypes, and to enhance the relevance of projects. Mention Implementation details including details of POs addressed through the projects withjustification)

#### 224 Initiatives related to Industry and/or Hospital interaction (20)

(Give details of the industry/ hospital involvement in the program such as industry-attached laboratories, partial delivery of appropriate courses by industry experts and/or collaborative initiatives with the hospitals etc. Mention the initiatives, implementation details and impact analysis)

### 2.25 Initiatives related to skill Development programs/industry internship/summer training (10)

(Mention the initiatives, implementation details and impact analysis)

#### 226 Continuous Evaluation Process (10)

(Mention the process followed and its effectiveness)

#### 227 Quality of Experiments (20)

(Quality from the equipment set-up and performance perspective)

CRITERION 3	Course Outcomes (COs) and Program Outcomes (POs)	100
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- 3. Course Outcomes (COs) and Program Outcomes (POs) (100)
- 3.1. Establish the correlation between the courses and the Program Outcomes (20)

(NBA defined Program Outcomes as mentioned in Annexure I)

3.1.1. Course Outcomes (SAR should include course outcomes of one course from each semester of study, however, should be prepared for all courses) (05)

**Note:** Number of Outcomes for a Course is expected to be around 6.

Course Name: Ciii Year of Study: YYYY - YY; For ex. C202 Year of study 2013-14

C202.1	<statement></statement>
C202.2	<statement></statement>
	<statement></statement>
C202.N	<statement></statement>

Table - 3.1.1

C202 is the second course in second year and '.1' to 'N' are the outcomes of this course.

3.1.2. CO-PO matrices of courses selected in 3.1.1 (four matrices to be mentioned; one per semester from 1<sup>st</sup> to 8<sup>th</sup> semester; atleast one per year) (05)

со	PO1	PO2	РОЗ	PO4	PO5	P06	P07	P08	PO9	PO10	PO11
C202.1											
C202.2											
C202.N											
C202											

**Table 3.1.2** 

**Note:** Correlation levels 1, 2 or 3 as defined below:

1: Slight (Low) 2: Moderate (Medium)

3: Substantial (High)

It there is no correlation, put '-'

#### 3.1.3. Course-PO matrix of courses for all four years of study (10)

Course	PO1	PO2	РОЗ	PO4	PO5	P06	P07	P08	PO9	PO10	PO11
C101											
C202											
C303											
C4											

Table 3.1.3\*

**Note:** Correlation levels1, 2 or 3, as defined below:

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

It there is no correlation, put '-'

#### 3.2. Attainment of Course Outcomes (40)

### 3.21. Describe the assessment processes used to gather the data upon whichthe evaluation of Course Outcome is based (10)

(Examples of data collection processes may include, but are not limited to, specific exam/tutorial questions, assignments, laboratory tests, project evaluation, student portfolios (A portfolio is a collection of artifacts that demonstrate skills, personal characteristics, and accomplishments created by the student during study period), internally developed assessment exams, project presentations, oral exams, focus groups etc. It is expected that each theory subject taught should impart specific knowledge and make a foundation for a set of Basic Concepts related to it. Similarly the laboratory experiments should have some predetermined and predefined skills which can be developed during the study)

# 3.22 Record the attainment of Course Outcomes of all courses with respect to set attainment levels (30)

Program shall have set Course Outcome attainment levels for all courses.

(The attainment levels shall be set considering average performance levels in the university examination or any higher value set as target for the assessment years. Attainment level is to be measured in terms of student performance in internal assessments with respect the course outcomes of a course in addition to the performance in the University examination)

<sup>\*</sup>It may be noted that contents of Table 3.1.2 must be consistent with information available in Table 3.1.3 for all the courses.

#### Measuring Course Outcomes attained through University Examinations

Target may be stated in terms of percentage of students getting more than the university average marks or more as selected by the Program in the final examination. For cases where the university does not provide useful indicators like average or median marks etc., the program may choose an attainment level on its own with justification.

### Example related to attainment levels Vs. targets: (The examples indicated are for reference only. Program may appropriately define levels)

Attainment Level 1: **60%** students scoring more than University average percentage marks or set attainment level in the final examination is considered to be attainment of "1"

Attainment Level 2: **70%** students scoring more than University average percentage marks or set attainment level in the final examination is considered to be attainment of "2"

Attainment Level 3: **80%** students scoring more than University average percentage marks or set attainment level in the final examination is considered to be attainment of "3"

- Attainment is measured in terms of actual percentage of students getting set percentage of marks.
- If targets are achieved then all the course outcomes are attained for that year. Program is expected to set higher targets for the following years as a part of continuous improvement.
- If targets are not achieved the program should put in place an action plan to attain the target in subsequent years.

# Measuring CO attainment through Internal Assessments: (The examples indicated are for reference only. Program may appropriately define levels)

Target may be stated in terms of percentage of students getting more than class average marks or set by the program in each of the associated COs in the assessment instruments (midterm tests, assignments, mini projects, reports and presentations etc. as mapped with the COs)

#### Example

Mid-term test 1 addresses C202.1 and C202.2. Out of the maximum 20 marks for this test 12 marks are associated with C202.1 and 8 marks are associated with C202.2.

Examples related to attainment levels Vs. targets:

Attainment Level 1: **60%** students scoring more than 60% marks out of the relevant maximum marks is considered to be attainment of "1"

Attainment Level 2: **70%** students scoring more than 60% marks out of the relevant maximum marks is considered to be attainment of "2"

Attainment Level 3: **80%** students scoring more than 60% marks out of the relevant maximum marks is considered to be attainment of "3"

- Attainment is measured in terms of actual percentage of students getting set percentage of marks.
- If targets are achieved then the C202.1 and C202.2 are attained for that year. Program is expected to set higher targets for the following years as a part of continuous improvement.
- If targets are not achieved the program should put in place an action plan to attain the target in subsequent years.

Similar targets and achievement are to be stated for the other mid term tests/internal assessment instruments

#### **Course Outcome Attainment:**

For example:

Attainment through University Examination: Substantial i.e. 3

Attainment through Internal Assessment: Moderate i.e. 2

Assuming 80% weightage to University examination and 20% weightage to Internal assessment, the attainment calculations will be (80% of University level) +(20% of Internal level) i.e. 80% of 3 + 20% of 2 = 2.4 + 0.4 = 2.8

**Note:** Weightage of 80% to University exams is only an example. Programs may decide weightages appropriately for University exams and internal assessment with due justification.

#### 3.3. Attainment of Program Outcomes (40)

### 3.3.1.Describe assessment tools and processes used for assessing theattainment of each PO (10)

(Describe the assessment tools and processes used to gather the data upon which the evaluation of each the Program Outcome is based indicating the frequency with which these processes are carried out. Describe the assessment processes that demonstrate the degree to which the Program Outcomes are attained and document the attainment levels)

#### 3.3.2. Provide results of evaluation of each PO (30)

Program shall set Program Outcome attainment levels for all POs.

(The attainment levels by direct (student performance) and indirect (surveys) are to be presented through Program level Course-PO matrix as indicated).

#### **PO Attainment**

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
C101											
C102											
C309											
C409											
Direct Attainment											
Indirect Attainment											

C101, C102 are indicative courses in the first year. Similarly, C409 is final year course. First numeric digit indicates year of study and remaining two digits indicate course nos. in the respective year of study.

- Direct attainment level of a PO is determined by taking average across all courses addressing that PO. Fractional numbers may be used for example 1.55.
- Indirect attainment level of a PO is determined based on the student exit surveys, employer surveys, co-curricular activities, extracurricular activities etc.

#### **Example:**

- 1. It is assumed that a particular PO has been mapped to four coursesC2O1, C3O2, C3O3, C4O1
- 2. The attainment level for each of the four courses will be as per the examples shown in 2.2.2
- 3. PO attainment level will be based on attainment levels of direct assessment and indirect assessment
- 4. It is assumed that while deciding on overall attainment level 80% weightage may be given to direct assessment and 20% weightage to indirect assessment through surveys from students(largely), employers (to some extent). Program may have different weightages with appropriate justification.
- 5. Assuming following actual attainment levels:

#### **Direct Assessment**

C201 -High (3)

C302 - Medium (2)

C303 - Low (1)

C401 - High (3)

Attainment level will be summation of levels divided by no. of courses 3+2+1+3/4=9/4=2.25

#### **Indirect Assessment**

Surveys, Analysis, customized to an average value as per levels 1, 2 & 3.

Assumed level - 2

PO Attainment level will be 80% of direct assessment + 20% of indirect assessment i.e. 1.8 + 0.4 = 2.2.

CRITERION 4	Students' Performance	180
CRITERION 4	Students' Performance	180

#### 4. Students' Performance (180)

Item	CAY	CAYm1	CAYm2	CAYm3
Sanctioned intake of the program (N)				
Total number of students admitted in first year(N1)				
Number of students admitted in 2nd year in the same batch via lateral entry (N2)				
Total number of students admitted in the Program (N1 + N2)				

#### 4.1. Enrolment Ratio (20)

Enrolment Ratio= N1/N

Item  (Students enrolled at the First Year Level on average basis during the previous three academic years starting from current academic year)	Marks
>=90% students enrolled	20
>=80% students enrolled	18
>=70% students enrolled	16
>=60% students enrolled	12
>=50% students enrolled	08
<50% students enrolled	0

#### 4.2. Success Rate in the stipulated period of the program (50)

Year of entry	Number of students admitted in 1st year + admitted via lateral entry in 2nd year (N1 + N2)	Number of students who have successfully graduated without backlogs in any year of study (Without backlog means no compartment/failure in any semester/year of study)			it backlogs s no any
		I Year	II Year	III Year	IV Year
CAY					
CAYm1					
CAYm2					
CAYm3					
CAYm4(LYG)					
CAYm5 (LYGm1)					
CAYm6 (LYGm2)					

Year of entry	Number of students admitted in 1st year + admitted via lateral entry in 2nd year (N1 + N2)	Number of students who have successfully graduated (Students with backlog in stipulated period of study)			ed
		I Year	II Year	III Year	IV Year
CAY					
CAYm1					
CAYm2					
CAYm3					
CAYm4 (LYG)					
CAYm5 (LYGm1)					
CAYm6 (LYGm2)					

#### 4.2.1. Success rate without backlogs in any year of study (30)

SI= (Number of students who graduated from the program without backlog)/
{(Number of students admitted in the first year of that batch) plus (lateral entry students admitted in second year of study)}

Average SI = Mean of success index (SI) for past three batches

Success rate without backlogs in any year of study = 30 \* Average SI

Item	Latest Year ( Graduation (LYG)	\f	Latest Year of Graduation minus2 (LYGm2)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry			
Number of students who have graduated without backlogs in the stipulated period			
Success index (SI)			

**Note:** If 100% students clear without any backlog then also total marks scored will be 50 as both 4.2.1 & 4.2.2 will be applicable simultaneously.

#### 4.2.2. Success rate with backlog in stipulated period of study (20)

SI= (Number of students who graduated from the program in the stipulated period of course duration)/ {(Number of students admitted in the first year of that batch) plus (lateral entry students admitted in second year of study)}

Average SI = mean of success index (SI) for past three batches

Success rate = 20 \* Average SI

Item	LYG	LYG <i>m</i> 1	LYGm2
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry			
Number of students who have graduated with backlog in the stipulated period  Success index (SI)			

#### 4.3. Academic Performance in Final Year (10)

Academic Performance = Average API

Academic Performance Index(API) = ((Mean of Final Year Grade Point Average of all successful Students on a 10 point scale) or (Mean of the percentage of marks of all successful students in Final Year/10)) \* (successful students/number of students appeared in the examination)

#### Successful students are those who passed in all the final year courses

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)			
Total no. of successful students (Y)			
Total no. of students appeared in the examination (Z)			
API = X * (Y/Z)	AP1	AP2	AP3
Academic Performance=Average API =(AP1 + AP2 + AP3)/3			

#### 4.4. Academic Performance in Third Year (10)

Academic Performance = Average API

**Academic Performance Index**= ((Mean of  $3^{rd}$  Year Grade Point Average of all successful Students on a 10-point scale) or (Mean of the percentage of marks of all successful students in Third Year/10)) \* (successful students/number of students appeared in the examination)

#### Successful students are those who are permitted to proceed to the final year

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)			
Total no. of successful students (Y)			
Total no. of students appeared in the examination (Z)			
$API = X^* (Y/Z)$	AP1	AP2	AP3
Average API = (AP1 + AP2 + AP3)/3			
Academic Performance= Average API = (AP1 + AP2 + AP3)/3			

#### 4.5. Academic Performance in Second Year (10)

Academic Performance = Average API

Academic Performance Index = (**API**)= ((Mean of  $2^{nd}$  Year Grade Point Average of all successful Students on a 10-point scale) or (Mean of the percentage of marks of all successful students in Second Year/10)) \* (successful students/number of students appeared in the examination)

#### Successful students are those who are permitted to proceed to the third year

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)			
Total no. of successful students (Y)			
Total no. of students appeared in the examination (Z)			
API = X * (Y/Z)	AP1	AP2	AP3
Academic Performance = Average API = (AP1 + AP2 + AP3)/3			

#### 4.6. Academic Performance in First Year (20)

Academic Performance=2.0\*Average API

Academic Performance Index (API) = ((Mean of  $1^{st}$  Year Grade Point Average of all successful Students on a 10 point scale) or (Mean of the percentage of marks of all successful students in first Year/ 10)) \* (successful students/number of students appeared in the examination)

#### Successful students are those who are permitted to proceed to the second year

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)			
Total no. of successful students (Y)			
Total no. of students appeared in the examination (Z)			
API = X * (Y/Z)	AP1	AP2	AP3
Average API = (AP1 + AP2 + AP3)/3			
Academic Performance=2.0 * Average API			

#### 4.7. Placement and Higher Studies (40)

Assessment Points = 40 \* (X + Y)/N

Item	LYG	LYG <i>m</i> 1	LYGm2
Total No. of Final Year Students (N)			
Number of students placed in Industries/ Hospitals/ Government sector through on/off campus			

recruitment or opted for Entrepreneurship (X)		
No. of students admitted to higher studies with valid scores in various qualifying exams (Y)		
X + Y		
Placement Index: (X + Y)/N		
T = Average of (X + Y)/N		
Assessment = 40 * T		

### 4.7.1 Provide the placement data in the below mentioned format with the name of the program and the assessment year:

Programs Name and Assessment Year						
S.no.	Name of the student placed	Enrollment no.	Name of the Employer	Appointment letter reference no. with date		

Table 4.7.1

#### 4.8 Professional Activities (20)

- **4.8.1.** Professional societies / chapters and organizing pharmacy events (5) (Provide the relevant details)
- **4.8.2. Publication of technical magazines, newsletters, etc. (5)** (List the publications mentioned along with the names of the editors, publishers, etc.)
- 4.8.3. Participation in inter-institute events by students of the program of study (10)

(Provide a table indicating those publications, which received awards in the events/conferences organized by other institutes)

CRITERION 5	Faculty Information and Contributions	175
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#### 5. Faculty Information and Contributions (175)

6. Name of the Faculty Mer Degree (highest degree) University Year of Graduation Association with the Institut Designation Designation Specialization Specialization Specialization Faculty Receiving Ph.D. during the Assessment Years Sponsored Research (Func Research) Consultancy and Produc Development	Member	Qı	ualificatio	on	tion		tion			Acad	lemic Rese		ded	;t
	. Name of the Faculty	(highest	University	of	with	Designation	of Joining	Department	Specialization	Paper	_	ulty Receiving Ph. the Assessment \		Consultancy and Product Development

Table B.5

**Note:** Please provide details for the faculty of the department, cumulative information for all the shifts for all academic years starting from current year in above format in Annexure - II.

#### 5.1. Student-Faculty Ratio (SFR) (20)

(To be calculated at Department I	Level;No of Faculty	as per the sanctioned	intake)
No. of UG Programs in the D	epartment (n): _		

No. of PG Programs in the Department (m):

No. of Students in UG 1st Year= **u1** 

No. of Students in UG 2rd Year= u2

No. of Students in UG 3rd Year= u3

No. of Students in UG 4th Year= u4

No. of Students in PG 1st Year= p1

No. of Students in PG 2<sup>nd</sup> Year=**p2** 

#### No. of Students = Sanctioned Intake + Actual admitted lateral entry

(The above data to be provided considering all the UG and PG programs of the department)

S = Number of Students in the Department = UG1 + PG1 + PG2

**F** = Total Number of Regular Faculty Members in the Department

Student Faculty Ratio (SFR) = S/F.

**Note:** If the Institute/Department is running Diploma, UG, PG programs parallelly, then for the UG & PG programs, total number of faculty will be calculated as mention below:

Total Number of faculty(F) in the Institute/Department **minus** Required number of faculty for Diploma programs (1:20).

programs	(1.20).		T
Year	CAY	CAYm1	CAYm2
u1.1			
u1.2			
u1.3			
u1.4			
UG1	u1.1+u1.2+u1.3+u1.4	u1.1+u1.2+u1.3+u1.4	u1.1+u1.2+u1.3+u1.4
p1.1			
p1.2			
PG1	p1.1+p1.2	p1.1+p1.2	p1.1+p1.2
pm.1			
pm.2			
PGm	pm.1+pm.2	pm.1+pm.2	pm.1+pm.2

Total No. of Students in the Department (S)	UG1 + PG1 +PGm=S1	UG1 + PG1+ + PGm= S2	UG1 + PG1+ + PGm= S3
No. of Faculty in the Department <b>(F)</b>	F1	F2	F3
Student Faculty Ratio (SFR)	SFR1=S1/F1	SFR2= S2/F2	SFR3= S3/F3
Average SFR	SFR:	=(SFR1+SFR2+SFR3)/3	

#### Table B.5.1

Marks to be given proportionally from a maximum of 20 to a minimum of 10 for average SFR between 15:1 to 20:1, and zero for average SFR higher than 20:1. Marks distribution is given as below:

15.00 - 15.50	-	20 marks
15.51 - 16.50	-	18 marks
16.51 - 17.50	-	16 marks
17.51 - 18.50	-	14 marks
18.51 - 19.50	-	12 marks
19.51 - 20.00	_	10 marks

Note: All the faculty whether regular or contractual (except Part-Time or hourly based), will be considered. The contractual faculty appointed with any terminology whatsoever, who have taught for 2 consecutive semesters with or without break between the two semesters in the corresponding academic year on full time basis shall be considered for the purpose of calculation in the Faculty Student Ratio. However, following will be ensured in case of contractual faculty:

- a. Shall have the PCI prescribed qualifications and experience.
- b. Shall be appointed on full time basis and worked for consecutive two semesters with or without break between the two semesters during the particular academic year under consideration.
- c. Should have gone through an appropriate process of selection and the records of the same shall be made available to the visiting team during NBA visit.

#### 5.1. Faculty Cadre Proportion (20)

The reference Faculty cadre proportion is 1(F1):2(F2):6(F3)

- F1: Number of Professors required = 1/9 \* Number of Faculty required to comply with 15:1Student-Faculty ratio.
- F2: Number of Associate Professors required = 2/9 \* Number of Faculty required to comply with15:1 Student-Faculty ratio.
- F3: Number of Assistant Professors required = 6/9 \* Number of Faculty required to comply with 15:1 Student-Faculty ratio

Voor	Profes	ssors	Associate Professors Assistant Profess			Professors
Year	Required F1	Available	Required F2	Available	Required F3	Available
CAY						
CAYm1						
CAY m2						
Average Numbers	RF1=	AF1=	RF2=	AF2=	RF3=	AF3=

Cadre Proportion Marks = 
$$\begin{pmatrix} AF1 \\ RF1 \end{pmatrix} + \begin{pmatrix} AF2 * 0.6 \\ RF2 \end{pmatrix} + \begin{pmatrix} AF3 * 0.6 \\ RF3 \end{pmatrix} * 10$$

- ❖ If AF1 = AF2= 0 then zero marks
- ❖ Maximum marks to be limited if it exceeds the allocated marks

Example: Intake = 180; Required number of Faculty: 12; RF1= 1, RF2=2 and Rf3=9 Case 1: AF1/RF1=1; AF2/RF2=1; AF3/RF3=1 Cadre proportion marks = (1+0.6+0.4) x10 = 20 Case 2: AF1/RF1=1; AF2/RF2=3/2; AF3/RF3=8/9 Cadre proportion marks = (1+0.9+0.3) x10 = limited to 20

#### 5.2. Faculty Qualification (20)

FQ = 2\*(10X + 4Y)/F where X is no. of faculty with Ph.D., Y is no. of faculty with M.Pharm., F is no. of faculty required to comply 1:15 Faculty Student ratio (no. of faculty and no. of students required to be calculated as per 5.1)

	Х	Y	F	FQ=2*[(10X+ 4Y)/F]
CAY				
CAYm1				
CAYm2				
Average Assessment:				

#### 5.3. Faculty Retention (20)

Item	Marks
>= 90% of required Faculty members retained during the period of assessment keeping CAYm2 as base year	20
>= 75% of required Faculty members retained during the period of assessment keeping CAYm2 as base year	16

>= 60% of required Faculty members retained during the period of assessment keeping CAYm2 as base year	12
>= 50% of required Faculty members retained during the period of assessment keeping CAYm2 as base year	8
<50% of required Faculty members retained during the period of assessment keeping CAYm2 as base year	0

#### 5.4. Innovations by the Faculty in Teaching and Learning (15)

Innovations by the Faculty in teaching and learning shall be summarized as per the following description.

Contributions to teaching and learning are activities that contribute to the improvement of student learning. These activities may include innovations including, however not limited to, use of ICT, in instruction delivery, instructional methods, assessment, evaluation and inclusive class rooms that lead to effective, efficient and engaging instruction. Any contributions to teaching and learning should satisfy the criteria:

- ❖ The work must be made available on Institute website
- ❖ The work must be available for peer review and critique
- ❖ The work must be able to be reproduced and built on by other scholars

The institution may set up appropriate processes for making the contributions available to the public, getting them reviewed and for rewarding. These may typically include statement of clear goals, adequate preparation, use of appropriate methods, significance of results, effective presentation and reflective critique.

#### 5.5. Faculty as participants in Faculty Development/Training Activities (15)

- ❖ A Faculty scores maximum five points for participation
- ❖ Participant in 2 to 5 days Workshop/Faculty Development Program: 3 Points
- ❖ Participant >5 days Workshop/Faculty Development Program: 5 points

Name of the Faculty	м	Max. 5 per Faculty				
Name of the Faculty	CAY	CAYm1	CAY m2			
Sum						
RF = Number of Faculty required to comply with 15:1 Student-Faculty ratio as per 5.1						

Assessment = 3 * Sum/(0.5 RF)		
Average assessment over three years (Marks limited to 1	5) =	

#### 5.6. Research and Development (40)

#### 5.6.1. Academic Research (10)

Academic research includes research paper publications, Ph.D. guidance, and faculty receiving Ph.D. during the assessment period.

- Number of quality publications in refereed/SCI Journals, citations, Books/Book Chapters etc. (6)
- Ph.D. guided /Ph.D. awarded during the assessment period while working in the institute (4)

All relevant details shall be mentioned.

#### 5.6.2. Sponsored Research (10)

Funded research:

(Provide a list with Project Title, Funding Agency, Amount and Duration)

Funding amount (Cumulative during CAYm1, CAYm2 and CAYm3):

```
Amount > 25 Lacs - 10 Marks

Amount >= 22 Lacs and <= 25 lacs - 9 Marks

Amount >= 19 Lacs and < 22 lacs - 8 Marks

Amount >= 16 Lacs and < 19 lacs - 7 Marks

Amount >= 13 Lacs and < 16 lacs - 6 Mark

Amount >= 10 Lacs and < 13 lacs - 5 Marks

Amount >= 08 Lacs and < 10 lacs - 4 Mark

Amount >= 06 Lacs and < 08 lacs - 3 Mark

Amount >= 05 Lacs and < 06 lacs - 2 Marks

Amount >= 04 Lacs and < 05 lacs - 1 Mark

Amount <= 4 Lacs - 0 Mark
```

#### 5.6.3. Consultancy (from Industry) (10)

(Provide a list with Project Title, Funding Agency, Amount and Duration)

Funding Amount (Cumulative during CAYm1, CAYm2 and CAYm3):

```
Amount > 25 Lacs - 10 Marks

Amount >= 22 Lacs and <= 25 lacs - 9 Marks

Amount >= 19 Lacs and < 22 lacs - 8 Marks

Amount >= 16 Lacs and < 19 lacs - 7 Marks

Amount >= 13 Lacs and < 16 lacs - 6 Mark

Amount >= 10 Lacs and < 13 lacs - 5 Marks

Amount >= 08 Lacs and < 10 lacs - 4 Mark

Amount >= 06 Lacs and < 08 lacs - 3 Mark

Amount >= 05 Lacs and < 06 lacs - 2 Marks

Amount >= 04 Lacs and < 05 lacs - 1 Mark

Amount <= 4 Lacs - 0 Mark
```

### **5.6.4.** Honorary Consultancy from Central/State/Local Government Organizations (5)

#### 5.6.5. Development activities (5)

Provide details:

- Product Development
- Research laboratories
- Instructional materials
- Working models/charts/monograms etc.

#### 5.7. Faculty Performance Appraisal and Development System (FPADS) (20)

Faculties of Higher Education Institutions today have to perform a variety of tasks pertaining to diverse roles. In addition to instruction, Faculty needs to innovate and conduct research for their self-renewal, keep abreast with changes in technology, develop expertise for the effective implementation of curricula. They are also expected to provide services to the hospitals/ industry and community in large for understanding and contributing to the solution of real-life problems. Another role relates to the shouldering of administrative responsibilities to co-operation with other Faculty, heads-of-departments and the Head of Institute. An effective performance appraisal system for Faculty is vital for optimizing the contribution of individual Faculty to institutional performance

The assessment is based on

- A well defined system instituted for all the assessment years
- Its implementation and effectiveness

#### 5.8. Visiting/Adjunct Faculty (5)

Adjunct faculty also includes experts from Industry, Research Organizations/Universities and other Government Organizations. Provide details of participation and contributions in teaching and learning and /or research by visiting/adjunct faculty for all the assessment years.

- Provision of visiting/adjunct faculty (2)
- Minimum 50 hours interaction in a year will result in 1 mark for that year; 1 marks x 3 years = 3 marks.

CRITERION 6 Facilities 120	
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#### 6. Facilities (120)

### 6.1. Availability of adequate, well-equipped classrooms to meet the curriculum requirements (20)

(Facilities for conducting theory classes)

#### 6.2. Faculty rooms (10)

(Conducive sitting place)

# 6.3. Laboratories including preparation room (wherever applicable), instrument/machine room and computer labs along with equipment and relevant facilities (60)

(Scientific Experiments Conducting/Computing facilities; availability, adequacy & effectiveness)

Lab Description	Batch size	Availability of Manuals	Quality of instruments	Safety measures	Remarks

Note: Give a separate table for Instrument room and Machine room listing all the instruments/equipment present with their make and model, existence of SOPs and Log Books for individual equipment.

#### 6.4. Drug Museum (5)

(Type & quality of collection in the museum with proper labeling and display)

#### 6.5. Medicinal Plant Garden (5)

(Area, demarcation, temporary/permanent arrangement, planting of plants under the shade in demarcated areas, adequacy of the plants)

#### 6.6. Non Teaching Support (20)

Name of the		Date of	Qualification Other			
technical staff	Designation	joining	At Joining	Now	technical skills gained	Responsibility

### 6.6.1. Availability of adequate and qualified technical supporting staff for program specific laboratories (10)

(Assessment based on the information provided in the preceding table)

#### 6.6.2. Incentives, skill upgrade, and professional advancement (10)

(Assessment based on the information provided in the preceding table)

CRITERION 7	Continuous Improvement	75

#### 7. Continuous Improvement (75)

#### 7.1. Improvement in Success Index of Students without the backlog (15)

Items	LYG	LYG <i>m</i> 1	LYGm2
Success index (from 4.2.1)			

SI = (Number of students who graduated from the program without backlog)/(Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry)

Assessment shall be based on improvement trends in success indices. Marks are awarded accordingly.

#### 7.2. Improvement in Placement and Higher Studies (15)

Assessment is based on improvement in:

- Placement: number, quality placement, core industry, pay packages etc.
- Higher studies: performance in GPAT etc., and admissions in premier institutions

Items	LYG	LYG <i>m</i> 1	LYG <i>m2</i>
Placement index (from 4.7)			

#### 7.3. Improvement in the API of the Final Year Students (10)

Academic Performance Index = ((Mean of Final Year Grade Point Average of all successful Students on a 10-point scale) or (Mean of the percentage of marks of all successful students in Final Year/10)) \* (successful students/number of students appeared in the examination)

Successful students are those who passed in all the final year courses

Academic Performance Index	CAYm1	CAYm2	CAYm3
Mean of CGPA or Percentage of all successful the students (X)			
Total no. of successful students (Y)			
Total no. of students appeared in the examination (Z)			
API = X*Y/Z			

#### 7.4. Improvement in the quality of students admitted to the program (15)

Assessment is based on improvement in terms of ranks/score in qualifying state level/national level entrances tests, percentage marks in Physics, Chemistry and Mathematics in 12<sup>th</sup> Standard and percentage marks of the lateral entry students.

Item	CAYm1	CAYm2	CAYm3	
National Level Entrance	No. of Students admitted			
Examination (Name of the Entrance Examination)	Opening Score/Rank			
	Closing Score/Rank			
State/University/Level Entrance Examination/Others	No. of Students admitted			
(Name of the Entrance	Opening Score/Rank			
Examination)	Closing Score/Rank			
Name of the Entrance	No. of Students admitted			
Examination for Lateral Entry or lateral entry details	Opening Score/Rank			
,	Closing Score/Rank			
Average CBSE/Any other Board students (Physics, Chemistry 8				

#### 7.5. Actions taken based on the results of evaluation of each of the POs (20)

Identify the areas of weaknesses in the program based on the analysis of evaluation of POs attainment levels. Measures identified and implemented to improve POs attainment levels for the assessment years.

Actions to be written as per table in 3.3.2.

#### Examples of analysis and proposed action

**Sample 1**-Course outcomes for a laboratory course in Pharmaceutical analysis did not measure up, as some of the laboratory instruments are not calibrated, standardized and not optimally used, as there was no laboratory work involving the use of HPLC and UV-visible spectrophotometer.

Action taken-The practical work in Pharmaceutical analysis has been upgraded by inclusion of analytical experiments involving the use of HPLC and UV-visible spectrophotometer with the help of SOPs generated.

**Sample 2**-In a course on Pharmaceutics theory, student performance has been consistently low with respect to some COs as analysis of answer scripts and discussions with the students revealed that this could be attributed to a weaker course and its delivery on GMP, GLP and Drug Regulatory Affairs.

Action taken-The theory course in Pharmaceutics and its delivery has been strengthened by including specific topics on quality control and quality assurance taught by experts drawn from Industry, Academia and Drug Regulatory Authorities.

**Sample 3**-In a course of Bio-pharmaceutics theory and practicals, the students' performance has been low with respect to attainment of some COs as it was revealed that theory and practical component in physical pharmacy is weak and contributed to poor basic concepts and their applications in higher classes.

Action taken- Extra classes were arranged for the students on the emphasis of the basic concepts in physico-chemical properties like PKA, Partition Coefficient, Biopharmaceutical Classification System(BCS) and other terms.

#### POs Attainment Levels and Actions for improvement - CAYm1

POs	Target Level	Attainment Level	Observations					
PO1: Sta	PO1: Statement as mentioned in Annexure I							
PO1								
Action 1:	Action 1:							
Action N	<u>!</u>							
PO2:Stat	ement as men	tioned in Annexu	re I					
PO2								
Action 1:								
Action N	1							
PO3: Sta	tement as me	ntioned in Annex	ure I					
PO3								
Action 1:								
Action N	1							
PO4: Sta	tement as me	ntioned in Annex	ure I					
PO4								
Action 1:								
Action N:								
PO5: Statement as mentioned in Annexure I								

PO5						
Action 1:	:					
Action N	:					
PO6 :Sta	tement as me	ntioned in Annex	ure I			
P06						
Action 1:						
Action N	:					
PO7:Stat	tement as mer	ntioned in Annexu	ıre I			
PO7						
Action 1:	:					
Action N	:					
PO8:Stat	tement as mer	ntioned in Annexu	ıre I			
P08						
Action 1:	:					
Action N	:					
PO9 :Sta	tement as me	ntioned in Annex	ure I			
PO9						
Action 1:	:					
Action N	:					
PO10 :St	atement as m	entioned in Anne	xure I			
PO10						
Action 1:	:					
Action N:						
PO11 :St	PO11 :Statement as mentioned in Annexure I					
PO11						
Action 1:						
Action N	Action N:					

Similar Tables should be presented for CAYm1 and CAYm2

CRITERION 8	Student Support Systems	50
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#### 8. Student Support Systems (50)

#### 8.1. Mentoring system to help at individual levels (5)

Type of mentoring: Professional guidance / career advancement / course work specific / laboratory specific / all-round development Number of faculty mentors: Number of students per mentor: Frequency of meeting:

(Details of the mentoring system that has been developed for the students for various purposes and also state the efficacy of such system)

#### 8.2. Feedback analysis and reward /corrective measures taken, if any (10)

Feedback collected for all courses: YES/NO Specify the feedback collection process: Percentage of students who participated: Specify the feedback analysis process: Basis of reward / corrective measures, if any: Number of corrective actions taken in the last three years:

(The institution needs to design an effective feedback questionnaire. It needs to justify that the feedback mechanism developed by the institution really helps to evaluate teaching, and finally, contributes to the quality of teaching and ensure attainment of set levels for each PO)

#### 8.3. Feedback on facilities (5)

(Assessment is based on feedback collection, analysis and corrective action taken in respect of library, computing facilities, canteen, sports etc.)

#### 8.4. Self Learning (5)

(Specify the facilities, materials and scope for self-learning / learning beyond syllabus and creation of facilities for self-learning / learning beyond syllabus)

#### 8.5. Career Guidance, Training, Placement (10)

(Specify the facility, its management and its effectiveness for career guidance including counseling for higher studies, campus placement support, industry interaction for training/internship/placement, etc.)

#### 8.6. Entrepreneurship Cell (5)

(Describe the facility, its management and its effectiveness in encouraging entrepreneurship and incubation)

#### 8.7. Co-curricular and Extra-curricular Activities (10)

(Specify the co-curricular and extra-curricular activities)

### CRITERION 9 Governance, Institutional Support and Financial Resources

100

#### 9. Governance, Institutional support and Financial Resources (100)

#### 9.1. Organization, Governance and Transparency (50)

### 9.1.1. Governing body, administrative setup, functions of various bodies, service rules procedures, recruitment and promotional policies (10)

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

The published rules, policies and procedures; year of publication and its implementation shall be listed. Also state the extent of awareness among the employees/students

#### 9.1.2. Decentralization in working and grievance redressal mechanism (15)

List the names of the faculty members who are administrators/decision makers for various responsibilities. Specify the mechanism and composition of grievance redressal cell.

#### 9.1.3. Delegation of financial powers (15)

Explicitly mention financial powers delegated to the Principal, Heads of Departments and relevant in-charges. Demonstrate the utilization of financial powers for each year of the assessment years.

## 9.1.4. Transparency and availability of correct/unambiguous information in public domain (10)

Information on the policies, rules, processes is to be made available on web site.

#### 9.2. Budget Allocation, Utilization, and Public Accounting at Institute level (30)

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

Total Income at Institute level: For CFY, CFYm1, CFYm2 & CFYm3

CFY: Current Financial Year, CFYm1 (Current Financial Year minus 1), CFYm2 (Current Financial Year minus 2) and CFYm3 (Current Financial Year minus 3)

#### For CFY

Total Income:			Actual expenditure (till):			Total No. of students:
Fee	Govt.	Grant(s)	Other Sources (specify)	Recurring Non- Special including recurring Projects/Any other,		Expenditure per student

		specify	

Note: Similar tables are to be prepared for CFYm1, CFYm2 & CFYm3.

Items	Budgeted in CFY	Actual expenses in CFY (till)	Budgeted in CFY <i>m</i> 1	Actual Expenses in CFYm1	Budgeted in CFYm2	Actual Expenses in CFYm2	Budgeted in CFYm3	Actual Expenses in CFYm3
Infrastructure Built-Up								
Library								
Laboratory equipment								
Laboratory consumables								
Teaching and non-teaching staff salary								
Maintenance and spares								
R&D								
Training and Travel								
Miscellaneous expenses *								
Others, specify								
Total								

<sup>\*</sup> Items to be mentioned.

#### 9.2.1. Adequacy of budget allocation (10)

Justify that the budget allocated over the years was adequate.

#### 9.2.2. Utilization of allocated funds (15)

State how the budget was utilized during the last three years.

#### 9.2.3. Availability of the audited statements on the institute's website (5)

Needs to make audited statements available on its website.

#### 9.3. Library and Internet (20)

It is assumed that zero deficiency report was received by the institution, Effective availability and utilization to be demonstrated.

#### 9.3.1. Quality of learning resources (hard/soft) (10)

- Relevance of available learning resources including e-resources
- Accessibility to students

#### 9.3.2. Internet (10)

- Name of the Internet provider
- Available bandwidth
- Wi Fi availability
- Internet access in labs, classrooms, library and other offices
- Security arrangements

#### Declaration

The head of the institution needs to make a declaration as per the format given below:

I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines in force as on date and the institute shall fully abide by them.

It is submitted that information provided in this Self Assessment Report is factually correct. I understand and agree that an appropriate disciplinary action against the Institute will be initiated by the NBA in case any false statement/information is observed during pre-visit, visit, post-visit and subsequent to grant of accreditation.

Date:	Signature, Name and Designation		
Place:	of the Head of the Institution with seal		

#### **ANNEXURE I: PROGRAM OUTCOMES**

- 1. Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
- **2. Planning Abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
- **3. Problem analysis:** Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
- **4. Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of thelimitations.
- **5. Leadership skills:** Understand and consider the human reaction to change, motivationissues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well-being.
- **6. Professional Identity:** Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
- **7. Pharmaceutical Ethics:** Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
- **8. Communication:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
- **9. The Pharmacist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
- **10. Environment and sustainability:** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- **11. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.