

17
**P.R.Government College(Autonomous)
Kakinada**

(Affiliated to AdikaviNannaya University)



Department of Chemistry

B.Voc(Pharmaceutical Chemistry)

Under NSQF Scheme

Board of studies

2021-22

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Note: BOS is to provide final soft copy in PDF and word formats and four copies of hard copies in bounded form to the office of Dean Academic affairs.

**P.R.Government College(Autonomous),KakinadaRe
commendedCompositionoftheBoardofStudiesofB.Voc
(PharmaceuticalChemistry)
Andit'sFunctionsofanAutonomousC
ollege2021-22**

Composition

1.Chairman,BoardofStudies:

Sri T.V.V.SatyaNarayanaM.Sc.,

NodalOfficerforB.Voc.(PharmaceuticalChemistry)

2.Theentirefacultyofeachspecialization.

- 1. Dr.D.Rama Rao**
- 2. Dr. D. Chenna Rao**
- 3. V. Sanjeev Kumar**
- 4. P. Vijay Kumar**
- 5. V.RamaBabu**
- 6. N.BujjiBabu**
- 7. T.UmaMaheswara Rao**
- 8. Dr.A.ChandraLeela**
- 9. Dr.Ch.Praveen**

3.SubjectexpertsfromoutsidethecollegetobenominatedbytheAcademicCouncil

**SriV.MallikharjunaSharma, LecturerinChemistry, ASD women
Govt.College(A),Kakinada**

Dr.k. Jhansi, LecturerinChemistry.

4.OneexperttobenominatedbytheVice-Chancellorfromapanelofsix

**RecommendedbytheCollegePrincipal,
Prof.K.Deepthi, AdikaviNannayaUniversity, Rajamundry.**

5.Expertfromindustry

- 1 Ch.S.N.Murthy, Director, Venky pharma pvt.Ltd, Yanam.**

6.One postgraduate meritorious alumnus nominated by the Principal.

V.MallikarjunaSarma, M.Sc., OrganicChemistry

Signatures of the members who attended the Board of studies in B. Voc (Pharmaceutical Chemistry)

Date:10.12.2021 Time: 3.00 Pm

Mode of conduct of meeting: offline mode in P.R. Govt. College(A), Kakinada.

S.no	Name of the member	Designation	Signature
1	Sri. T. V. V. Satyanarayana	Chairman, Board of Studies, Nodal Officer for B. Voc (Pharmaceutical Chemistry)	T. V. V. Satyanarayana 10/12/2021
2	Prof. K. Deepthi	University Nominee Asst. Professor & Head of the Department of Chemistry, AKNU, Rajamundry.	K. Deepthi
3	Sri. K,anand	Subject Expert	K. Anand 10/11/21
4	DR.RAMESH BOGA	Founder & MD Boga R Laboratories, Peddapuram & Suvane, USA	
5	V. Mallikarjuna Sarma	Lecturer in Chemistry A.S.D Govt College Kakinada	V. Mallikarjuna Sarma 10/12/2021
7	Dr. D. Chenna Rao	Member Lecturer in chemistry Department of Chemistry	Dr. D. Chenna Rao 10/12/2021
8	V. Sanjeev Kumar	Member Lecturer in chemistry	V. Sanjeev Kumar
9	P. Vijay Kumar	Member Lecturer in Chemistry	P. Vijay Kumar
10	V. Rama Babu	Member Lecturer in Chemistry	V. Rama Babu
11	Student members: Hephshibah. K Mohan. Ph	Admn No:5215422 Admn No:5215420	Hephshibah. K Mohan. Ph

ACTION PLAN BOS MEETING-CHEMISTRY HELD ON 06-04-2021.

Department activities for the academic year 2020-2021.

Annexure I

1. Organizing National/State level seminars/Workshops/Conferences/Training programmes etc., with topics and other details.

(Mandatory for each Department)

- i) Staff development programme
- ii) Training in the use of HPLC
- iii) Awareness on OZONE protection
- iv) National Chemistry day
- v) Chem.fest
- vi) National Science day 2020
- vii) Guest lectures
- viii) Training in water analysis

2. Change of modules in the syllabus content.

Syllabus designed for first and second and final years as per university regulations. CBCS introduced for final year w.e.f. 2018-19 & CBCS introduced for I & II year w.e.f. 2020-21.

3. Plan for utilization of funds for Autonomous/UGC/other grants available for arranging guest lectures, faculty improvement programmes, study tours, equipping laboratories, reference books & other necessary teaching-learning material with ICT enabled teaching.

I. Study visits to:

Rs, 50,000

- 1. Hetero Laboratories, Nakkapally
- 2. Dr. Reddy's Laboratories, Yanam.
- 3. National Institute of Hydrology, Kakinada.
- 4. Nagarjuna Fertilizers and Chemicals Ltd, Kakinada.
- 5. Coromandel International Ltd., Kakinada
- 6. Venky Parenterals, Yanam

II.

1. Sophisticated version UV-Visible spectrophotometer-

5.0 lakhs

2. Other equipment

1.50 lakhs

3. Consumables

1.98 lakhs

4. Plan for organizing subject oriented community outreach programmes & allocation of necessary funds. (Mandatory for each Department)

- | | | | |
|-----|------------------------------|-----|--------|
| i) | Adoption of village | Rs. | 20,000 |
| ii) | Medical Awareness programmes | Rs. | 10,000 |

5. Institution of new medals/incentives/prizes etc., from alumni, philanthropists, parents, faculty etc., - Strategies to be recommended

6. Introduction of new Online programmes –PG/UG/Diploma and certificate courses.

Swayam online course

Industrial Pharmacy

7. Any other programme that enhance the learning capacity of students and their employable & knowledge skills.

Training in the use of instruments like AAS, UV-

Vis, HPLC, flame photometer, uranium analyzer, soil and water analysis projects, air quality projects.

8. Change in internal assessment exams for conducting Mid Semester by way of Project work/Assignment.

It is proposed to conduct an online Examination for Mid Semester Examination from 2020-21.

9. Suggest panel of examiners/papers setters & other experts/nominees for BOS deliberations.

Chemistry:

1. Dr. D. S. V. N. N. Rama Murthy, GDC(A), Tuni
2. Sri V. Sridhar, Arts College, Rajahmundry
3. Dr. B. Mallikarjuna, Arts College, Rajahmundry

Department of B.Voc (Pharmaceutical Chemistry) Board of Studies Meeting

Dt. 10-12-2021

Resolutions:

The meeting of Board of studies in B.Voc (Pharmaceutical Chemistry) is convened on 10-12-2021 at dept of chemistry in P.R. Govt. College (A). The Principal Dr. B.V. Tirupanyam, Dr. K. Deepthi, University Nominee, Sri K. Anand, GDC Pithapuram..., Subject Expert, Sri V. Mallikarjuna Sarma, GDC (W), Kakinada, all members of the faculty of Chemistry and student representatives attended the meeting. Agenda items are discussed and resolutions are made.

1. It is resolved to follow the revised Choice Based Credit System for B. Voc courses scrupulously as per the directions of Andhra Pradesh State Council of Higher Education (APSCHE), Vijayawada and also as per the directions of Adikavi Nannaya University, Rajamahendravaram with effect from the academic year 2020-21.
2. It is resolved to follow the revised curricular framework for B. Voc courses scrupulously as per the directions of Andhra Pradesh State Council of Higher Education (APSCHE), Vijayawada and also as per the directions of Adikavi Nannaya University, Rajamahendravaram with effect from the academic year 2020-21.
3. It is resolved to choose Life Skill courses and Skill Development Courses in concurrence with the vocational course.
4. It is resolved to conduct industrial visits for B. Voc students to make them acquainted with the industrial environment.
5. It is resolved to admit both Intermediate (MPC) stream and Intermediate (Bi.P.C) stream students into B. Voc courses and design the curriculum accordingly.
6. It is resolved to run B.Voc (Pharmaceutical Chemistry) in two streams namely
 - i. B.Voc (Pharmaceutical Chemistry) Maths stream and

II. B.Voc(Pharmaceutical Chemistry) Biology stream

7. It is resolved to organize Guest lectures by eminent professors and Industrial Experts.
8. Resolved to implement pass minimum for internal assessment for CBSE pattern students as the pattern is learner oriented.
9. Resolved _____ to _____ submit proposals to conduct a faculty development programme in instrumentation techniques/advanced topics with the assistance of industry representatives and university representatives.
10. Resolved to conduct Industrial Internship for a period of two months during the summer after completion of semester end examinations.
11. It is resolved to make it mandatory for the students in the entire V semester to undergo industrial internship for a period of 6 months in a Pharma Industry.
12. It is resolved to get the students of B.Voc(Pharmaceutical Chemistry) registered in NAPS (National Apprenticeship Promotion Scheme).
13. It is resolved that the B.Voc(Pharmaceutical Chemistry) course is restructured in B.Sc(Professional)(Pharmaceutical Chemistry). The proposal is put forward to Academic Council and General Body Meeting.
14. It is resolved to follow strictly the guidelines of UGC under NSQF scheme for the recruitment and engagement of faculty and non-teaching staff.
15. It is resolved to follow the _____ same _____ syllabi for English, Second Language, Life Skill Courses and Skill Development Courses as those prescribed for UG Courses by APSCHE, Vijayawada.
16. It is resolved to follow the same syllabi for main subjects namely Mathematics, Botany and Chemistry as those prescribed for UG Courses by APSCHE, Vijayawada.
17. It is resolved to implement 50% external & 50% internal marks for both theory & practicals from the academic year 2020-2021 for first year students only.
18. It is resolved to implement 60% external & 40% internal marks for both theory & practicals from the academic year 2020-2021 for second & third year students
19. Resolved to reduce 40 marks of Theory internal to 20 marks for mid exams and 20 marks for co-curricular activities (Seminar / Assignment / Quiz / Group Discussion) and reduce 50 marks of theory internal to 25 marks for mid exams and 25 marks for co-curricular activities (Seminar / Assignment / Quiz / Group Discussion).
20. Resolve to conduct practical examinations semester wise.

The following paper setters are recommended

- i) Dr. D. S. V. N. N. Rama Murthy, GDC(A), Tuni
- ii) K. Anand, GDC Pithapuram.,
- iii) Sri V. Mallikarjuna Sarma, GDC(W), Kakinada

About B.Voc (Pharmaceutical Chemistry)

The University Grants Commission (UGC) had launched a scheme on 27 February, 2014 for skills development based higher education as part of college/university education, leading to Bachelor of Vocation (B.Voc.) degree with multiple entry and exit points. Considering the implementation modalities, the guidelines of the scheme have been revised in the year 2015. The B.Voc. Programme is focused on universities and colleges providing undergraduate studies which would also incorporate specific job roles and their NOSs along with broad based general education. This would enable the graduates completing B. Voc to make a meaningful participation in accelerating India's economy by gaining appropriate employment, becoming entrepreneurs and creating appropriate knowledge.

Objectives

1. To provide judicious mix of skills relating to a profession and appropriate content of general education.
2. To ensure that the students have adequate knowledge and skills, so that they are work ready at each exit point of the programme.
3. To provide flexibility to students by means of pre-defined entry and multiple exit points.
4. To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and industry requirements. Such graduates apart from meeting the need of local and national industry are also expected to be equipped to become part of the global workforce.
5. To provide vertical mobility to students coming out of (a) 10+2 with vocational subjects; and (b) Community Colleges.

Course Objectives:

To make student

1. Understand the basic concepts of Organic Chemistry
2. Understand different types of organic reactions
3. Acquire knowledge on qualitative and quantitative chemical analysis
4. Develop skills in the usage and application of laboratory instruments
5. Understand the mechanisms of various organic reactions
6. Acquire knowledge on various types of Pharmacopoeia.
7. Understand various forms of medicines and the role of additives in formulations
8. Acquire knowledge on different types of instrumentation techniques in chemical analysis.
9. Understand stereochemistry of carbon compounds and its importance in organic chemistry
10. Acquire knowledge on the basic concepts of computers
11. Develop skills in MS Word, MS Excel and MS PowerPoint applications.
12. Develop communication and soft skills.

13. Undergo industrial training and acquire skills in various instrumentation techniques.
14. Visit pharmaceutical industries and understand the functioning of plant,

Course Outcomes:

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

1. Acquire competence and skills in various techniques in chemical analysis.
2. Ready to get a suitable position or job roles such as Quality Control Chemist, Quality Assurance Chemist, Production Chemist in a Pharmaceutical Industry.
3. Choose for an academic progression under vertical mobility for higher studies.
4. Eligible for various competitive examinations in various posts recruited by State and Central Governments.

Sem-I

Category	Subject/Paper	Course	Theory /Practical	No.of Hrs./ Week	No offered	Evaluation		
						Internal	External	TOTAL
First language	ENGLISH PRACTISE COURSE-I		Theory	4	3	50	50	100
	Second Language		Theory	4	3	50	50	100
	Life Skill Courses		Theory	2	2		50	50
	Skill Development Course		Theory	2	2		50	50
Major Subject-1	Electrical Appliances							
	Mathematics / Physics	C1	Theory	6	5	50	50	100
	Chemistry	C1	Theory	4	4	50	50	100
	Chemistry		Practical	2	1		50	50
	Basic Pharmaceutics-I	C1	Theory	4	4	50	50	100
	Basic Pharmaceutics-I		Practical	2	1		50	50
	Basic Pharmaceutics-II	C2	Theory	2	2	-	50	50
Vocational	Basic Pharmaceutics-II		Practical	2	1		50	50
			TOTAL	34	28	250	550	800

**P.R.GOVERNMENT COLLEGE(A), KAKINADA DEPARTMENT OF CHEMISTRY
B.VOC(PHARMACEUTICAL CHEMISTRY)(MATHS STREAM) CURRICULAR FRAMEWORK (CREDIT STABLE)
SEMESTER - II**

Category	Subject/Paper	Course	Theory / Practical	No. of Hrs./ Week	No of credits	Evaluation	
						Internal	External TOTAL
First language	ENGLISH PRACTICE COURSE-II		Theory	4	3	50	50 100
Second Language	Telugu/Sanskrit/Hindi		Theory	4	3	50	50 100
Life Skill Courses	Information and Communication Technology		Theory	2	2	-	50 50
Skill Development Course-1	Food Adulteration		Theory	2	2	-	50 50
Skill Development Course-1	Dairy technology		Theory	2	2	-	50 50
Major Subject-1	Mathematics	C2	Theory	6	5	50	50 100
Major Subject-2	Chemistry	C2	Theory	4	4	50	50 100
	Chemistry		Practical	2	1		50 50
Vocational	Basic Analytical Chemistry-I	C3	Theory	4	4	50	50 100
	Basic Analytical Chemistry-I		Practical	2	1		50 50
	Health Education and Community Pharmacy	C4	Theory	2	2	-	50 50
	Health Education and Community Pharmacy		Project	2	1	-	50 50
	;		TOTAL	36	30	250	600 850

**P.R.GOVERNMENT COLLEGE(A),
KAKINADA DEPARTMENT OF CHEMISTRY
B.VOC(PHARMACEUTICAL CHEMISTRY)(MATHS STREAM) CU
CURRICULAR FRAMEWORK (CREDIT STABLE)**

Semester-III

Category	Subject/Paper	Course	Theory /Practical	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
First Language	ENGLISH PRACTICE COURSE-III		Theory	4	3	40	60	100
Second Language	Telugu/Sanskrit/Hindi		Theory	4	3	40	60	100
Life Skill Course-I	Environment Education		Theory	2	2	-	50	50
Life Skill Course-II	Personality Development and Leadership		Theory	2	2	-	50	50
Skill Development Course	Environment Audit		Theory	2	2	-	50	50
Major Subject-1	Mathematics	C3	Theory	6	5	40	60	100
Major Subject-2	Chemistry	C3	Theory	4	4	40	60	100
	Chemistry		Practical	2	1		50	50
	Advanced Pharmaceutics-I	C5	Theory	4	4	40	60	100
	Advanced Pharmaceutics-I		Practical	2	1		50	50
	Advanced Pharmaceutics-II	C6	Theory	2	2	-	50	50
	Advanced Pharmaceutics-II		Project	2	1	-	50	50
			TOTAL	36	30	200	650	850

**P.R.GOVERNMENT COLLEGE(A),
KAKINADA DEPARTMENT OF CHEMISTRY
B.VOC(PHARMACEUTICAL CHEMISTRY)(MATHS STREAM) CURRICU
LAR FRAMEWORK (CREDIT TABLE)
Semester – IV**

Category	Subject/Paper	Course	Theory /Practical I	No. of Hrs./ Week	No of credits	Evaluation		
						Internal	External	TOTAL
Major Subject-1	Mathematics	C4	Theory	6	5	40	60	100
	Mathematics	C5	Theory	6	5	40	60	100
Major Subject-2	Chemistry	C4	Theory	4	4	40	60	100
	Chemistry		Practical	2	1		50	50
	Chemistry	C5	Theory	4	4	40	60	100
	Chemistry		Practical	2	1		50	50
Vocational	Basic Analytical Chemistry-II	C7	Theory	4	4	40	60	100
	Basic Analytical Chemistry-II		Practical	2	1		50	50
	Industrial Safety and Management	C8	Theory	4	4	40	60	100
	Industrial Safety and Management		Practical	2	1		50	50
			TOTAL	36	30	300	500	800

P. R. GOVERNMENT COLLEGE(A),
KAKINADA DEPARTMENT OF CHEMISTRY
B.VOC(PHARMACEUTICAL CHEMISTRY)(MATHS)STREAM CURRICU-
LAR FRAMEWORK(CREDITTABLE)

Semester-V

Subject/Paper	Theory /Practical t	No of credit s	Evaluation
First Phase of Apprenticeship bet- ween 1 st and 2 nd year (Summer Vacation)		0.4	100
Second Phase of Apprenticeship be- tween 2 nd and 3 rd year (Summer Vacation)		0.4	100
INDUSTRIAL INTERNSHIP		4.8	3000
TOTAL		30	1000

**P.R.GOVERNMENT COLLEGE(A),
KAKINADA DEPARTMENT OF CHEMISTRY
B.VOC(PHARMACEUTICAL CHEMISTRY)(MATHS STREAM) CURRICU
LAR FRAMEWORK (CREDIT TABLE)
Semester – VI**

Category	Subject/Paper	Course	Theory /Practical	No. of Hrs./ Week	No of credits	Evaluation	
						Internal	External TOTAL
Vocational	Pharma Regulatory Affairs	C9	Theory	4	4	40	60
	Pharma Regulatory Affairs		Practical	2	1		50
	Pharmaceutical Inorganic Chemistry	C10	Theory	4	4	40	60
	Pharmaceutical Inorganic Chemistry		Practical	2	1		50
	Advanced Analytical Chemistry	C11	Theory	4	4	40	60
	Advanced Analytical Chemistry		Practical	2	1		50
	Basic Quality Control and Quality Assurance	C12	Theory	4	4	40	60
	Basic Quality Control and Quality Assurance		Practical	2	1		50
	Documentation for Quality Control	C13	Theory	4	4	40	60
	Documentation for Quality Control		Practical	2	1		50
	Pharmaceutical and Medicinal Chemistry	C14	Theory	4	4	40	60
	Pharmaceutical and Medicinal Chemistry		Practical	2	1		50
			TOTAL	36	30	240	660
							900

**P.R.GOVERNMENTCOLLEGE(A),KAKINADADEPARTM
ENTOFCHEMISTRY**

**B.VOC(PHARMACEUTICALCHEMISTRY)(BIOLOGYSTREAM)CU
RICULARFRAMEWORK(CREDITSTABLE)**

SEMESTER-I

Category	Subject/Paper	Course	Theory /Practical	No. ofHr s./ Week	No ofcredi ts	Evaluation	
						Internal	External TOTAL
Firstlanguage	ENGLISHPRAXISCOURSE-I		Theory	4	3	50	50 100
SecondLanguage	Telugu/Sanskrit/Hindi		Theory	4	3	50	50 100
LifeSkillCourse	ComputerApplications		Theory	2	2	-	50 50
SkillDevelopment Course	Plantnursery		Theory	2	2	-	50 50
MajorSubject-1	Botany	C1	Theory	4	4	50	50 100
	Botany		Practical	2	1		50 50
MajorSubject-2	Chemistry	C1	Theory	4	4	50	50 100
	Chemistry		Practical	2	1		50 50
Vocational	BasicPharmaceutics-I	C1	Theory	4	4	50	50 100
	BasicPharmaceutics-I		Practical	2	1		50 50
	BasicPharmaceutics-II	C2	Theory	2	2	-	50 50
	BasicPharmaceutics-II		Practical	2	1		50 50
			TOTAL	34	28	250	600 850

Category	Subject/Paper	Course	Theory /Practical I	No. ofHrs./ Week	No ofcredits	Evaluation		
						Internal	External	TOTAL
First language	ENGLISH PRAXIS COURSE-II		Theory	4	3	50	50	100
Second Language	Telugu/Sanskrit/Hindi		Theory	4	3	50	50	100
Life Skill Courses	Information and Communication Technology		Theory	2	2	-	50	50
Skill Development Course-1	Food Adulteration		Theory	2	2	-	50	50
Skill Development Course-2	Fruits and vegetables preservation		Theory	2	2	-	50	50
Major Subject-1	Botany	C2	Theory	4	4	50	50	100
	Botany		Practical	2	1		50	50
Major Subject-2	Chemistry	C2	Theory	4	4	50	50	100
	Chemistry		Practical	2	1		50	50
Vocational	Basic Analytical Chemistry-I	C3	Theory	4	4	50	50	100
	Basic Analytical Chemistry-I		Practical	2	1		50	50
	Health Education and Community Pharmacy	C4	Theory	2	2	-	50	50
	Health Education and Community Pharmacy		Project	2	1	-	50	50
			TOTAL	36	30	250	650	900

Category	Subject/Paper	Course	Theory /Practical	No. ofHrs./ Week	No offered	Evaluation		
						Internal	External	TOTAL
First language	ENGLISH PRAXIS COURSE-III		Theory	4	3	40	60	100
Second Language	Telugu/Sanskrit/Hindi		Theory	4	3	40	60	100
Life Skill Course-I	Environment Education		Theory	2	2	-	50	50
Life Skill Course-II	Personality Development and Leadership		Theory	2	2	-	50	50
Skill Development Course	Environment Audit		Theory	2	2	-	50	50
Major Subject-1	Botany	C3	Theory	4	4	40	60	100
	Botany		practical	2	1		50	50
Major Subject-2	Chemistry	C3	Theory	4	4	40	60	100
	Chemistry		Practical	2	1		50	50
	Advanced Pharmaceutics-I	C5	Theory	4	4	40	60	100
	Advanced Pharmaceutics-I		Practical	2	1		50	50
Vocational	Advanced Pharmaceutics-II	C6	Theory	2	2	-	50	50
	Advanced Pharmaceutics-II		Project	2	1	-	50	50
			TOTAL	36	30	200	700	900

**P.R.GOVERNMENT COLLEGE(A),
KAKINADA DEPARTMENT OF CHEMISTRY
B.VOC(PHARMACEUTICAL CHEMISTRY)(BIOLOGY STREAM)CU
RICULAR FRAMEWORK(CREDIT TABLE)
Semester-IV**

Category	Subject/Paper	Course	Theory /Practical I	No. of Hr s./ Week	No of credi ts	Evaluation		
						Internal	External	TOTAL
Major Subject-1	Botany	C4	Theory	4	4	40	60	100
	Botany		Practical	2	1		50	50
	Botany	C5	Theory	4	4	40	60	100
	Botany		Practical	2	1		50	50
Major Subject-2	Chemistry	C4	Theory	4	4	40	60	100
	Chemistry		Practical	2	1		50	50
	Chemistry	C5	Theory	4	4	40	60	100
	Chemistry		Practical	2	1		50	50
Vocational	Basic Analytical Chemistry-II	C7	Theory	4	4	40	60	100
	Basic Analytical Chemistry-II		Practical	2	1		50	50
	Industrial Safety and Management	C8	Theory	4	4	40	60	100
	Industrial Safety and Management		Practical	2	1		50	50
			TOTAL	36	30	255	645	900

P.R.GOVERNMENT COLLEGE(A),
KAKINADA DEPARTMENT OF CHEMISTRY
B.VOC(PHARMACEUTICAL CHEMISTRY)(BIOLOGY STREAM) CU
CURRICULAR FRAMEWORK (CREDIT TABLE)

Semester-V

Subject/Paper	Theory /Practical	No of credits	Evaluation
First Phase of Apprenticeship between 1 st and 2 nd year (Summer Vacation)		04	100
Second Phase of Apprenticeship between 2 nd and 3 rd year (Summer Vacation)		04	100
INDUSTRIAL INTERNSHIP		12	200
TOTAL		20	400

**P.R.GOVERNMENT COLLEGE(A),
KAKINADA DEPARTMENT OF CHEMISTRY
B.VOC(PHARMACEUTICAL CHEMISTRY)(BIOLOGY STREAM) CU
RICULAR FRAMEWORK (CREDIT TABLE)
Semester - VI**

Category	Subject/Paper	Course	Theory /Practical	No. of Hrs./Week	No. of credits	Evaluation		
						Internal	External	TOTAL
Vocational	Pharma Regulatory Affairs	C9	Theory	4	4	40	60	100
	Pharma Regulatory Affairs		Practical	2	1		50	50
	Pharmaceutical Inorganic Chemistry	C10	Theory	4	4	40	60	100
	Pharmaceutical Inorganic Chemistry		Practical	2	1		50	50
	Advanced Analytical Chemistry	C11	Theory	4	4	40	60	100
	Advanced Analytical Chemistry		Practical	2	1		50	50
	Basic Quality Control and Quality Assurance	C12	Theory	4	4	40	60	100
	Basic Quality Control and Quality Assurance		Practical	2	1		50	50
	Documentation for Quality Control	C13	Theory	4	4	40	60	100
	Documentation for Quality Control		Practical	2	1		50	50
	Pharmaceutical and Medicinal Chemistry	C14	Theory	4	4	40	60	100
	Pharmaceutical and Medicinal Chemistry		Practical	2	1		50	50
			TOTAL	36	30	255	645	900

P.R.GOVERNMENT COLLEGE(AUTONOMOUS)KAKINADA
CURRICULAR FRAMEWORK FOR B.VOC COURSE UNDER NSQF FOR THE YEAR 2020-21
B.Voc Pharmaceutical Chemistry (Maths stream/Biology stream)

SUBJECT/SEMESTER		I		II		III		IV		V		VI	
		H/W	C	H/W	C	H/W	C	H/W	C	H/W	C	H/W	C
English		4	3	4	3	4	3						
Second Language (Telugu/Hindi/Sanskrit)		4	3	4	3	4	3						
Life Skill Courses		2	2	2	2	2+2	2+2						
Skill Development Courses		2	2	2+2	2+2	2	2						
Core Subjects													
Major Subject-1	C1 to C5 Maths/Botany (Theory & Practicals)	6/4+2	4+1	6/4+2	4+1	6/4+2	4+1	4+2	4+1				
	C1 to C5 Chemistry (Theory & Practicals)	4+2	4+1	4+2	4+1	4+2	4+1	4+2	4+1				
Vocational	C1 to C14 including SECP pharmaceutical Chemistry (Theory & Practicals)	4+2	4+1	4+2	4+1	4+2	4+1	4+2	4+1	4+2	4+1	4+2	4+1
	C2, C4, C6 (Theory and Lab/Institutional/Industrial Training Pharmaceutical Chemistry)	2+2	2+1	2+2	2+1	2+2	2+1	4+2	4+1	4+2	4+1	4+2	4+1
Total Hrs/Week (Academic Credits)		34	28	36	30	36	30	36	30	36	30	36	30
Extension Activities													
NCC/NSS/Sports/Extra Curricular													
Yoga							1						
Extra Credits													
Hrs/W (Total Credits)		34	28	36	30	36	31	36	33	36	30	12	4

Third Phase of Apprenticeship for the entire V/VI Semester
 and Second Phase (2 Spells) of Apprenticeship between I and II semester
 and between II and III year Summer Vacation

Marks and Credits Distribution

S.No.	Course Type	No. of Courses	Course wise Teaching Hrs/Week	Credits for each Course	Total Credits	Each Course Evaluation				Total (Theory + Practical)	Total Marks (Maths Stream/Biology Stream)
						Theory		Practical (Maths Stream/Biology)			
						Continuous Assessment	End Semester		Total		
1	English	3	4	3	9	40	60		100	100	300
2	Second Language	3	4	3	9	40	60		100	100	300
3	Life Skill Courses	4	2	2	8	0	50		50	50	200
4	Skill Development Courses	4	2	2	8	0	50		50	50	200
5	Core/SE-I Maths/Botany	5	6/4+2	4+1	25	40	60	0/50	100	100/150	500/750
6	Core/SE-II Chemistry	5	4+2	4+1	25	40	60	0/50	100	100/150	750
7	Vocational Courses (C1 to C14) Pharmaceutical Chemistry	11	4+2	4+1	55	40	60	50	100	150	1650
							50	50	50	100	300
8	Summer Vacation Internship	2		4	8					100	200
9	Industrial Internship for one full Semester	1		12	12					200	200
10	Extension Activities (Non Academic Credits)										
	NCC/NSS/Sports/Extra Curricular			2	2						
	Yoga	2		1	2						
	Extra Credits										
	Hrs/W (Total Credits) & Marks	43			172						4600/4850

PITHAPURRAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA
B.VOCCOURSES UNDER NSQF SCHEME

STUDENT ELIGIBILITY AND FACULTY ELIGIBILITY

S.NO	NAME OF THE COURSE	STUDENTS ELIGIBILITY (10+2 OR EQUIVALENT WITH SPECIFIC GROUP IF ANY)	FACULTY ELIGIBILITY WITH SPECIALIZATION
1	B.VOC (COMMERCIAL AQUACULTURE)	Intermediate/10+2 or equivalent with Bi.P.C/Biology	M.Sc Aquaculture/Marine Biology/Zoology with fishery biology spe
2	B.VOC (HORTICULTURE)	Intermediate/10+2 or equivalent with Bi.P.C/Biology	M.Sc Horticulture/Biology/Botany with Horticulture Specialization
3	B.VOC (PHARMACEUTICAL CHEMISTRY)	Intermediate or 10+2 with MPC/BiPC group	M.Pharm/M.Sc (Pharmaceutical Chemistry)/M.Sc (Chemistry)
4	B.VOC (FOOD TECHNOLOGY)	Intermediate or 10+2 with MPC/BiPC group	M.Sc (Food Technology)/M.Sc (Food Processing)/M.Sc (Food and Nutrition)
5	B.VOC (JOURNALISM AND MASS COMMUNICATION)	Intermediate or 10+2 or equivalent	M.A (Journalism)
6	B.VOC (HOTEL MANAGEMENT)	Intermediate/10+2 or equivalent	MBA (Hotel Management)/M.Com Hotel Management/M.Comor MBA with Diploma in Hotel Management

QUESTIONPAPERSETTERSFORB.VOC(PHARMACEUTICALCHEMISTRY)

The following papersetters for Vocational (Pharmaceutical Chemistry) papers are recommended.

S. No.	Name of the Faculty	Designation	Address for Correspondence	Mobile Number	E-mail ID
1	Sri V. Sanjeev Kumar	Lecturer in Chemistry	P.R. Government Degree College, Kakinada, East Godavari District.	9849324966	skvudi1972@gmail.com
2	Malikarjuna Sarma	Lecturer in Chemistry	A.S.D. GOVERNMENT COLLEGE for women (A), Kakinada Kakinada, East Godavari District.	9676822550	V.mallikarjunasarma@gmail.com
3	Sri V. Sridhar	Lecturer in Chemistry	Government arts college (A), RAJAMUNDRY, East Godavari District	8919262964, 7386048119	sridhar.vegi07@gmail.com
4	Dr. B. Malikarjuna	Lecturer in Chemistry	Government College (Autonomous), Rajahmundry	8985503523	mallik.chem@gmail.com
5	Dr. G. Venkata Rao	Lecturer in Chemistry		9440444223	gnrgjcn@gmail.com
6	Sri B. Venkata Rao	Lecturer in Chemistry	Government arts college (A), RAJAMUNDRY, East Godavari District		venkatbasa@gmail.com
7	Smt. Manchiraju Padmaja	Lecturer in Chemistry	Government arts college (A), RAJAMUNDRY, East Godavari District	9441653995	padmaja717@gmail.com

Semester-I

P.R.GOVERNMENT COLLEGE(A), KAKINADA

B.Voc(PHARMACEUTICAL CHEMISTRY) FIR

1ST YEAR I SEMESTER

Course-1: BASIC PHARMACEUTICS-I

Scope: This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.

Objectives: Upon completion of this course the students should be able to:

- Know the types of dosage forms
- Understand the professional way of handling the prescription
- Preparation of various conventional dosage forms
- Packaging materials, their classification and functions

UNIT-I

Pharmaceutical Dosage forms

Definition & classification with examples (based on routes of administration, on physical state and topical dosage forms). Additives or excipients & their importance in the dosage forms. Need for conversion of drugs into dosage forms. *Stability testing of the Pharmaceutical Dosage form.*

UNIT-II

Solid Dosage forms-I (Tablets)

Definition- Types of Tablets with examples, Advantages of tablets. Essential qualities of a good tablet. Active Ingredients (Excipients) used in the formulation of tablets. Methods of manufacturing of tablets. Evaluation and quality control tests for tablets: Appearance, uniformity of content, hardness, friability, weight uniformity, disintegration & dissolution. Manufacturing defects in Tablets. *General characteristics for tablets*

UNIT-III

Solid Dosage forms-II (Capsules)

Capsules- definition, types of capsules-

Preparation, advantages and disadvantages of Hard Gelatin Capsules- *and*

Preparation, advantages and disadvantages of Soft Gelatin Capsules - Evaluation and quality control tests for capsules; *Storage of Capsule Dosage forms*

UNIT-IV

Packaging of Pharmaceuticals:

Characteristics of containers and closures- classification of containers- materials used for the construction of containers- Glass- Plastic- Metals- Paper- Materials used for the construction of closures- closure Liners- Aerosols- Introduction to aerosol packaging

Factors influencing the packaging material & stability aspects of packing

Recommended Books

1. A Textbook of Pharmaceuticals Formulation by B.M.Mithal, VallabhPrakashan.
2. The Theory and Practice of Industrial Pharmacy, Leon Lachman, Herbert Lieberman and Joseph Kanig, Editors, Lea and Febiger, Philadelphia. Latest edition Varghese publishing House
3. Indian Pharmacopoeia, Govt. of India Publication.

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY) FIR
1ST YEAR 1ST SEMESTER
Course-1: BASIC PHARMACEUTICS-I

WEIGHTAGE TO CONTENT

Sl.No.	Course Content	Essay(10M)	Short(5M)	Total marks
1.	UNIT-I	1	2	20
2.	UNIT-II	2	2	30
3.	UNIT-III	2	2	30
4.	UNIT-IV	1	1	15
	Total	6	7	95

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY) FI
RST YEAR I SEMESTER
Course-1: BASIC PHARMACEUTICS-I

Time 2hrs

Max.Marks-50

SECTION-A

Answer any **THREE** questions choosing at least **ONE** question from each section

3x10=30M

1. One question is to be set from unit-I
2. One question is to be set from unit-II
3. One question is to be set from unit-II

SECTION-B

4. One question is to be set from unit-III
5. One question is to be set from unit-III
6. One question is to be set from unit-IV

Answer any **FOUR** questions

4x5=20M

7. One question is to be set from unit-I
8. One question is to be set from unit-I
9. One question is to be set from unit-II
10. One question is to be set from unit-II
11. One question is to be set from unit-III
12. One question is to be set from unit-III
13. One question is to be set from unit-IV

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY)FI
RSTYEARISEMESTER
Course-1: BASIC PHARMACEUTICS-I
QUESTION BANK
(Essay questions 10 marks)

UNIT: I

1. Explain the classification of pharmaceutical dosage forms based on
 - i. Physical state
 - ii. Route of administration
2. What are additives? Write their role and importance in dosage forms.

UNIT: II

1. Write any two methods of preparation of tablets.
2. Explain manufacturing defects in tablets.
3. Define tablet and write different types of tablets.

UNIT: III

1. Explain the preparation of hard gelatin capsules.
2. Explain the preparation of soft gelatin capsules.
3. Explain the evaluation and quality control tests for capsules.

UNIT: IV

1. Write the characteristics of containers and closers.
2. Write an assay on glass containers.
3. Explain an assay on plastic containers.
4. Explain different types of materials used in the construction of closers.

Short Questions

UNIT-I

1. Define formulations. Write a note on topical dosage forms.
2. Explain the need for conversion of drugs into dosage forms.

UNIT-II

1. Define tablet and write different types of tablets.
2. What are the advantages of tablet dosage forms.
3. What are the essential qualities of a good tablet.

UNIT-III

1. What are the advantages and disadvantages of hard gelatin capsules.
2. What are the advantages and disadvantages of hard gelatin capsules.
3. What are capsules? Write different types of capsules.

UNIT-IV

1. Write a note on metals used in the construction of containers.
2. Write a note on paper used in the construction of containers.
3. Explain the principle of an aerosol container.
4. Write the applications of aerosol packaging.

P.R.GOVERNMENTCOLLEGE(A),KAKINADA
B.Voc(PHARMACEUTICALCHEMISTRY)FI
RSTYEARISEMESTER
Course-1:BASICPHARMACEUTICS-I

PRACTICALS

1. Preparation and submit paracetamol elixir
2. Preparation and submit sucrose syrup
3. Preparation and submit aqueous iodine solution
4. Preparation and submit ORS powder
5. Preparation and submit turpentine liniment

P.R.GOVERNMENT COLLEGE(A), KAKINADA

B.Voc(PHARMACEUTICAL CHEMISTRY) FI

RST YEAR I SEMESTER

Course-2 BASIC PHARMACEUTICS-II

Scope: This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.

Objectives: Upon completion of this course the students should be able to:

- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
- Understand the professional way of handling the prescription
- Preparation of various conventional dosage forms

UNIT-I:

Pharmaceutical Solutions:

Introduction - Types of Pharmaceutical Solutions - Explanation with examples - Quality attributes - Formulation components - stability of solutions - physical, chemical and microbial stability.

Unit-II:

Metrology (Weights and Measures):

Imperial System, metric system, conversions from Imperial to metric and metric to Imperial systems - calculations based on Imperial and metric systems - Alcohol Dilutions - Alligation methods - Isotonic solutions - molecular concentration - sodium chloride equivalents.

Unit-III:

Posology

Definition - Factors influencing dose of a drug - Pediatric dosage - dose calculations - doses proportionate to age - Young's Formula, Dilling's Formula and Clark's Formula -

Doses proportionate to surface area. Dose, route of administration and uses of some drugs: Ampicillin, Ascorbic acid, aspirin and Caffeine.

Unit-IV:

Prescription

Definition - parts of a prescription - receiving the prescription - reading and checking the prescription - incompatibilities in prescription - types of incompatibilities in prescription (physical, chemical and therapeutic).

REFERENCE BOOKS

Pharmaceutics I by Dr. Sambathkumar, Dr. Muruges. Pharmaceutics II by Dr. Sambathkumar, Dr. Muruges.

P.R.GOVERNMENTCOLLEGE(A),KAKINADA
B.Voc(PHARMACEUTICALCHEMISTRY)FIR
STYEARISEMESTER
Weightagetoccontent
Course-2:BASICPHARMACEUTICS-II

Sl.No.	CourseContent	Essay(10M)	Short(5M)	Totalmarks
1.	UNIT-I	2	1	25
2.	UNIT-II	1	2	20
3.	UNIT-III	1	2	20
4.	UNIT-IV	2	2	30
	Total	6	7	95

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY) FIR
STYEARISEMESTER
Course-2: BASIC PHARMACEUTICS-II
Model Question Paper

Time 2hrs.

Max.Marks-50M

PART-I

SECTION-A

Answer any THREE questions choosing at least ONE question from each section

3x10=30M

1. One question is to be set from unit-I
2. One question is to be set from unit-I
3. One question is to be set from unit-II

SECTION-B

4. One question is to be set from unit-III
5. One question is to be set from unit-IV
6. One question is to be set from unit-IV

Answer any FOUR questions

4x5=20M

7. One question is to be set from unit-I
8. One question is to be set from unit-I
9. One question is to be set from unit-II
10. One question is to be set from unit-II
11. One question is to be set from unit-III
12. One question is to be set from unit-III
13. One question is to be set from unit-IV

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY) FIR
STYEARISEMESTER
Course-2: BASIC PHARMACEUTICS-II
QUESTION BANK
(Essay questions 10 marks)

UNIT-I:

1. Explain different types of pharmaceutical solutions.
2. Explain different formulation components in oral solution dosage forms.
3. Explain different quality attributes in pharmaceutical solutions.

UNIT-II:

1. Write an essay on metric system and imperial system.
2. Answer the following.
 - i. What is the allegation method for alcohol dilution?
 - ii. Calculate the volume of each of 90%, 60%, 30% and water required to produce 500 ml of 50% of alcohol.

UNIT-III:

1. Write the factors influencing the dose of a drug.
2. Write dose, route of administration and uses of the following drugs: Ampicillin, Ascorbic acid, aspirin and Caffeine.

UNIT-IV:

1. Define prescription. Explain different parts of prescription.
2. Explain different types of incompatibilities in prescriptions.

Short Questions (5 Marks)

UNIT-I:

1. Explain physical stability and chemical stability of pharmaceutical solutions.
2. Explain microbial stability of pharmaceutical solutions.

UNIT-II:

1. Write a note on conversion of metric system into imperial system.
2. Write a note on isotonic solutions.

3. Define sodium chloride equivalent. Calculate the gram of sodium chloride needed to make 30 ml of a 2% isotonic physostigmine salicylate solution using sodium chloride equivalent method.
(Given E value of physostigmine salicylate = 0.16)

UNIT-III:

1. Define Posology. Write Young's formula and Dilling's formula for calculation of children's dose.
2. Define Posology. Write Clark's formula and formula based on surface area for calculation of children's dose.

UNIT-IV:

1. Write a note on receiving the prescription.
2. Write a note on reading and checking the prescription.

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY)FIR
STYEARISEMESTER
Course-2: BASIC PHARMACEUTICS-II

Practicals:

1. Preparation and standardization of 0.1M HCl
2. Preparation and standardization of 0.1N H_2SO_4
3. Preparation and standardization of 0.1N NaOH
4. Preparation of standardization of 1M Oxalic acid
5. Preparation of standardization of 0.1N KMnO_4