

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 postgraduatemeritoriousalumnusnominatedbythePrincipal.

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)Biologystream

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 meet 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		Theory	2	2		50	50
	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)		04	100
Second Phase of Apprenticeship be- tween 2 nd and 3 rd year (Summer Vacation)		04	100
INDUSTRIAL INTERNSHIP		12	300
TOTAL		20	400

**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),
KAKINADADEPARTMENT OF CHEMISTRY
B.VOC(PHARMACEUTICAL CHEMISTRY)(BIOLOGY STREAM)CU
RICULAR FRAMEWORK(CREDIT STABLE)

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

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY) SECO
ND YEAR IV SEMESTER
COURSE-7: BASIC ANALYTICAL CHEMISTRY-
II PAPER-: BASIC ANALYTICAL CHEMISTRY-II

Course objectives:

To make the student

- i. Understand the theory and applications of different types of titrations.
- ii. Understand the principle and steps involved in gravimetric analysis.
- iii. Compare precision and accuracy.

Outcomes:

The student will be able to

- i. Learn the theory and applications of different types of titrations.
- iv. Learn the principle and steps involved in gravimetric analysis.
- ii. Learn different types of errors in chemical analysis.
- iii. Learn different types of solvents and reagents.

Unit-I

Theoretical considerations and application in drug analysis and quality control of the following analytical techniques

1. Non-aqueous titrations
2. Complexometric titrations
3. Miscellaneous Methods of Analysis: Diazotization titrations, Kjeldahl method of nitrogen estimation, Karl-Fischer titration.

Unit-II:

Precipitation titration

Introduction, Mohr's method, Volhard's method, adsorption indicators and its use in precipitation titrations.

Gravimetric analysis-

principle and steps involved in gravimetric analysis, coprecipitation and postprecipitation. Limitations of gravimetric analysis.

Unit-III:

Errors and evaluation of analytical data

Error definition classification of errors (determinate and indeterminate errors), propagation of errors, absolute and relative error, accuracy and precision-methods of expressing accuracy and precision, confidence limits, significant figures and rules for computation of significant figures.

Source of errors

Unit-IV:

Reagents&Solvents

Reagents, Solvents and their Classification:-

Reagents: classification of reagents according to their action as, Acids, Bases, Salts, oxidizing, reducing, complexing, chelating and precipitating reagents with suitable examples. Solvents: Classification of solvents as protic, aprotic and amphoteric solvents, Acidic basic and neutral solvents, polar and non polar solvents, aqueous and non-aqueous solvents. Explanation with suitable examples.

Reference Books:

1. Pharmaceutical inorganic chemistry by Kazasomasekhara Rao, Ch. Venkata Sure sh.
2. Pharmaceutical inorganic chemistry by G.R. Chatwal.

P.R.GOVERNMENT COLLEGE(A), KAKINADA

B.Voc(PHARMACEUTICAL CHEMISTRY) SECO

ND YEAR IV SEMESTER

COURSE-7: BASIC ANALYTICAL CHEMISTRY-II

WEIGHTAGE TO CONTENT

Sl.No.	Course Content	Essay(10M)	Short(5M)	Total marks
1.	UNIT-I	2	2	30
2.	UNIT-II	2	2	30
3.	UNIT-III	2	2	30
4.	UNIT-IV	2	2	30
	Total	8	8	120

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY) SECO
ND YEAR IV SEMESTER
COURSE-7: BASIC ANALYTICAL CHEMISTRY-II

Time 2 hrs. 30 min

Max marks-60

SECTION-A

Answer the following questions

4x10=40M

1. One question is to be set from unit-I
Or
One question is to be set from unit-I
2. One question is to be set from unit-II Or
One question is to be set from unit-II
3. One question is to be set from unit-III Or
One question is to be set from unit-III
4. One question is to be set from unit-IV Or
One question is to be set from unit-IV

SECTION-B

Answer any FOUR questions

4x5=20M

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

P.R.GOVERNMENT COLLEGE(A), KAKINADA

B.Voc(PHARMACEUTICAL CHEMISTRY)

SECOND YEAR IV SEMESTER COURSE-

7: BASIC ANALYTICAL CHEMISTRY-II

QUESTION BANK ESSAY

QUESTIONS(10M)

UNIT-I

1. Write the theory and applications of non-aqueous titrations.
2. Write the theory and applications of complexometric titrations.
3. Explain the estimation of nitrogen by Kjeldahl method.
4. Explain Carl Fischer titrations.

UNIT-II

1. Explain Mohr's method for the determination of chloride.
2. Explain Volhard's method for the determination of chloride.
3. What is gravimetric analysis? Write the steps involved in gravimetric analysis.

UNIT-III

1. Explain significant figures. Write rules for computation of significant figures.
2. Define errors. Explain different types of errors.
3. Define accuracy and precision. Write different ways of expressing accuracy and precision.

UNIT-IV

1. Explain the classification of solvents with examples.
2. Explain the classification of reagents with examples.

SHORT ANSWER QUESTIONS(5M)

UNIT-I

1. Write a note on diazotization titrations.
2. Write different types of complexometric titrations.

UNIT-II

1. Explain post-precipitation.
2. Explain co-precipitation.
3. What are the advantages and disadvantages of gravimetric analysis?

UNIT-III

1. Write the differences between accuracy and precision.
2. Explain propagation of errors.
3. Write a note on confidence limits.

UNIT-IV

1. Explain acidic, basic and neutral solvents with examples.
2. Explain oxidizing, reducing, complexing reagents with examples.

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY)
SECOND YEAR IV SEMESTER COURSE-
7: BASIC ANALYTICAL CHEMISTRY-II
PRACTICALS

1. Preparation of standardization of 0.02N EDTA
2. Determination of Calcium using EDTA
3. Determination of Nickel using EDTA
4. Determination of chloride by Mohr's method

P.R.GOVERNMENT COLLEGE(A), KAKINADA
B.Voc(PHARMACEUTICAL CHEMISTRY) SECO
ND YEAR IV SEMESTER
COURSE-8: INDUSTRIAL SAFETY AND MANAGEMENT

Course objectives:

To make the student

- i. Understand the different types of hazards
- ii. Understand the different types of explosives.
- iii. Understand the different types of toxic gases

Outcomes:

The student will be able to

- iv. Learn the occupational health & safety.
- v. Learn the industrial safety & best practices.

UNIT 1:

Industrial hazards

Definition, examples - types of hazards - fire, fire triangle concept, mechanism of fire, Flash point, fire point, auto ignition temperature - lower and upper flammable limits - ignition source of major fires - classification of fires and exhaustion to deal with them, fire protection measures, fire and emergency.

UNIT 2:

Toxic gases-

classification, remedial measures, classification and hazardous materials. Noise and Vibration - effects and hazards of noise - control methods of noise-generation, nature & types of vibration - effects of vibration - control methods

Explosions:

Definition and classification of explosions. mechanism of explosion, incidents responsible for onset and hazards and accidents with flammable liquids and precautions.

Unit-III

Occupational health and safety- elements of occupational health - industrial hygiene fundamental principles and industrial hygiene - housekeeping - Methods of good housekeeping - Housekeeping contests - the 5 's' concept - ergonomic - definition - impact of poor ergonomics and good ergonomics.

Loss Prevention - Classification of Losses - Losses in a manufacturing plant - reasons and suggested measures to minimize them-

Unit-IV

Industrial safety: Elements of industrial safety - unsafe act and unsafe condition- accidents-cause of accidents-remedial measures-personal protective equipment.

Effective Systems-Best Practices

Quality Management System(QMS)-ISO 9000-

ISO 14000 And ISO 14001 Definitions, Nature And Importance Of Management-

Principles Of Management. **REFERENCE BOOKS:**

1. Elements of industrial hazards by Ratan Raj Tatiya

2. Fundamentals of industrial safety & health by
Dr. K. U. Mistry, Siddarth Prakashan Publishers, 2008.

P.R. GOVERNMENT COLLEGE(A), KAKINADA

B. Voc (PHARMACEUTICAL CHEMISTRY) SEM CO

ND YEAR IV SEMESTER

COURSE-8: INDUSTRIAL SAFETY AND MANAGEMENT

WEIGHTAGE TO CONTENT

Sl.No.	Course Content	Essay(10M)	Short(5M)	Total marks
1.	UNIT-I	2	2	30
2.	UNIT-II	2	2	30
3.	UNIT-III	2	2	30
4.	UNIT-IV	2	2	30
	Total	8	8	120

P.R.GOVERNMENTCOLLEGE(A),KAKINADA

B.Voc(PHARMACEUTICALCHEMISTRY)

SECONDYEARIVSEMESTER

COURSE-8:INDUSTRIALSAFETYANDMANAGEMENT

Time2hrs.30min

Maxmarks-60

SECTION-A

4x10=40M

Answerthefollowingquestions

1. Onequestionistobesetfromunit-I
Or
Onequestionistobesetfromunit-I
2. Onequestionistobesetfromunit-IIOr
Onequestionistobesetfromunit-II
3. Onequestionistobesetfromunit-IIIOr
Onequestionistobesetfromunit-III
4. Onequestionistobesetfromunit-IVOr
Onequestionistobesetfromunit-IV

SECTION-B

4x5=20M

AnsweranyFOURquestions

5. Onequestionistobesetfromunit-I
6. Onequestionistobesetfromunit-I
7. Onequestionistobesetfromunit-II
8. Onequestionistobesetfromunit-II
9. Onequestionistobesetfromunit-III
10. Onequestionistobesetfromunit-III
11. Onequestionistobesetfromunit-IV
12. Onequestionistobesetfromunit-IV

P.R.GOVERNMENT COLLEGE(A), KAKINADA

B.Voc(PHARMACEUTICAL CHEMISTRY)

SECOND YEAR IV SEMESTER

COURSE-8: INDUSTRIAL SAFETY AND MANAGEMENT

QUESTION BANK

ESSAY QUESTIONS (10M)

UNIT-I

1. Explain the terms
A) Flashpoint B) Firepoint
2. Explain ignition sources of major fires. 3. Classification of fires.
4. Write a note on fire & emergency.

UNIT-II

1. Explain the classification of explosion.
2. Explain the incidents responsible for onset of hazards & accidents.
3. Write about classification of toxic gases.

UNIT-III

1. Explain the 5'S' concept.
2. What are ergonomics. Write the impact of poor & good ergonomics.
3. Explain the classification of losses.

UNIT-IV

1. What are the elements of industrial safety.
2. Explain the principles of management.
3. Define management & explain nature and importance of management.

SHORT ANSWER QUESTIONS (5M)

UNIT-I

1. Write a short note on industrial hazards with examples.
2. Explain types of hazards.
3. Write a short note on mechanism of fire.
4. 'Fire triangle concept'

UNIT-II

1. What are the remedial measures for prevention of toxic gases.
2. Write a short note on noise control techniques.
3. What are the sources of noise in the industries.
4. What are the effects of noise pollution.

UNIT-III

1. Define OHS. What are the elements involved in OHS.
2. Write a short note on housekeeping.
3. Write the reasons & suggest the measures to minimize the losses.

UNIT-IV

1. Write a note on personnel protective equipment.
2. What are the remedial measures to minimize the accidents.
3. Write a note on ISO 14001 STANDARD
4. Write a note on ISO 14000 STANDARD

P.R.GOVERNMENTCOLLEGE(A),KAKINADA

B.Voc(PHARMACEUTICALCHEMISTRY)

SECONDYEARIVSEMESTER

COURSE-8:INDUSTRIALSAFETYANDMANAGEMENT

PRACTICALS

- 1.DeterminationofPHmetrictitrationofHClusingstandardNaOH.
- 2.DeterminationofPHmetrictitrationofAceticacidusingstandardNaOH.
- 3.Determination of concentration of KMnO_4 using colorimeter
- 4.Determination of concentration of thio cyanide using colorimeter