



R. C. Patel Educational Trust's
R. C. Patel Arts, Commerce and Science College
Shirpur-425405, Karvand Naka, Dist.- Dhule (Maharashtra)
E-mail - principal@rcpasc.ac.in

Affiliated to: K. B. C. North Maharashtra University, Jalgaon-425001

Self Study Report (SSR): 2024 (4th Cycle)



Criteria - 1
Curricular Aspects

Key Indicator - 1.2
Academic Flexibility

Metric No. - 1.2.1 (QnM)

Number of Certificate/Value added courses offered and online courses of MOOCs, SWAYAM, NPTEL etc. where the students of the institution have enrolled and successfully completed during the last five years)

Submitted to
National Assessment and Accreditation Council, Bangalore



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce and Science College

Karvand Naka, Shirpur 425405, Dist - Dhule, Maharashtra

☎: (02563) 299328

E-mail: principal@rcpasc.ac.in

President

Hon. Bhupeshbhai Patel

Principal

Dr. D. R. Patil

Date: 15/06/2024

Declaration

This is to declare that, the information, reports, true copies of the supporting documents, numerical data etc. submitted in these files is verified by Internal Quality Assurance Cell (IQAC) and it is correct as per the office record.

This declaration is for the purpose of NAAC accreditation of the HEI for the 4th cycle assessment period 2018-19 to 2022-23.

Place: Shirpur

Date: 15/06/2024

Dr. Sandip P. Patil

IQAC Co-ordinator

IQAC Coordinator

R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce and Science College

Shirpur, Dist.-Dhule (M.S.) 425405



Dr. D. R. Patil

IQAC Chairman & Principal

PRINCIPAL

R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce and Science College

Shirpur, Dist.-Dhule (M.S.) 425405



R.C. Patel Arts, Commerce and Science College, Shirpur

Certificate Course Syllabus, Attendance, Mark sheet and Sample Certificate

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**K.B.C. North Maharashtra University,
Jalgaon**

Ordinance 181

College

**R. C. Patel Arts, Commerce and Science
College, Shirpur**

Certificate Course in

Commerce for Textile Industry

Faculty

SCIENCE

Academic year

(2020-21)

Syllabus

Level of diploma	Graduate diploma
Eligibility	As per ordinance 181
Duration	1 Year
Total Credits	20 Credits

Course Structure

Pape rNo.	Old Subject Name	New Subject Name	Credits
CT 101	Fundamental of Computer	Basics of Computer	6 Credits
CT 102	Communicative English	Business Communication	6 Credits
CT 103	Industrial visit Project viva	Project	8 Credits

CT101 – Basic Computing

Topics	Lectures Allotted (in hrs.)
1.Introduction to computer system Definition of computer, History of computers Block Diagram of Computer, Types of computer, Neumann machine Input Devices: Keyboard, Mouse, Scanner 1.4 Output Devices: Monitor, Printer, Plotter Memory: Primary Memory, RAM, ROM, EPROM, PROM, Secondary Memory, Hard Disk, Pen Drive Definition: Data, Information, Algorithm, Flowchart, Program, Hardware, And Software: System Software, Application, Software, Firmware, Interpreter, compiler Programming Languages: High level, Middle Level, Low Level	22
2.Introduction CPU parts Motherboard, SMPS,USB device	10
3.Operating system WINDOWS 7, Ubuntu, Linux	8
4.Internet and networking LAN, WAN, MAN, WWW and MODEM	10
5.Applications Word Processor, spreadsheets, database management software, Multimedia development software (Internet)	10
6.Introduction to flow chart , Define symbols of flowchart, Examples	10
7. Computer Virus Computer Virus: Indication of virus infection Types of Viruses: Boot Sector Virus, Programs Virus, Macro Virus, Multipartite Virus, Polymorphic Virus, Worms, Malware: Spyware, Adware, Anti-Virus Computer Ethics: Hacking, Software Piracy, Spamming, Phishing	10
8.Windows Operating Environment Features of MS – Windows, Control Panel, Taskbar, Desktop, Windows Application, Icons, Windows Accessories, Notepad, Paintbrush.	10
Total	90

CT 103: Project

(Total lecture allotted 120)

Visit and Study any corporate office/department (textile industry) and Prepare study report on it. Group size is maximum 2 students

Note-The student has to write a report based on the actual work undertaken during the industrial visit at the specific selected enterprise/organization or sub system and get it certified by the concerned teacher that the Project report has been satisfactorily completed and submit TWO typed copies of the same to the co-coordinator of the certificate course.

Suggested Reading

1. Fundamentals of computers :V. Raja Raman
2. Computer Fundamentals: P.K. Sinha
3. Computer Fundamentals (Architecture and Organization) -B. Ram
4. Microsoft Office 2000 – Vipra Computers
5. Digital Fundamentals - Floyd
6. Digital Principles and Applications - A. P. Malvina & D.P.Leach (TMH)
7. Communication skills : C. B. Gupta
8. Business English :Department of English University of Delhi



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Certificate in Commerce for Textile Industry (CGPA Pattern)

Examination held in May 2021

Student Name : Sonar Hitesh Jagdish

College Name : R. C. Patel Arts Commerce and Science College, Shirpur

Seat Number : 902121

Exam Centre : Shirpur (240051)

Paper Code	Paper Name	AM	Credits (Max.)	Marks Obtained
CCCTI 101	Basics of Computer	TH	6.0	92
CCCTI102	Communication English	TH	6.0	90
CCCTI 103	Lab Course	PR	8.0	90

Result: Pass

CGPA: 6.10

Grade: O



[Handwritten Signature]

Co-ordinator

Abbreviations:

AM: Assessment Methods, **P:** Pass, **F:** Fail, **AB:** Absent, **RR:** Result Reserved, **TH:** Theory, **PR:** Practical, **O:** Outstanding Grade

**K.B.C. North Maharashtra University,
Jalgaon**

R. C. Patel A. C. S. College, Shirpur

Under ordinance 181

Certificate Course in

BIOINFORMATICS

Syllabus

With effective from

A.Y.-2021-22

Level of diploma	Graduate diploma
Eligibility	As per ordinance 181
Duration	1 Year
Total Credits	20 Credits

Course Structure

CCBI 101	Fundamentals of Biology	6 Credits
CCBI 102	Introduction to Bioinformatics	6 Credits
CCBI 103	Lab course	8 Credits

CCBI 101 - Fundamentals of Biology

Topics	Lectures allotted
	<i>(in hrs)</i>
<i>Fundamental aspects of life</i>	
<ul style="list-style-type: none"> • Basic properties of life, Basic chemistry, pH, concept of acids, bases • Prokaryotic and eukaryotic cells- Structure and functions of various cell organelles 	15
<i>Concepts of chemistry</i>	
<ul style="list-style-type: none"> • Elements and atoms • Molecules and compounds, types of bonds • Water and its properties • Bioenergetics: Laws of Thermodynamics and its Applications; Concept of free energy, Gibbs free energy. 	15
<i>Introduction to living forms</i>	
<ul style="list-style-type: none"> • Characteristics of life, the tree of life • Animal kingdom – General properties • Plant kingdom– General properties • Microorganisms (bacteria, algae, fungi, protozoa and viruses) • Morphology and ultra-structure of bacteria • Concept of growth and different growth phases of bacteria • Microbial growth • Kinetics of growth 	25
<i>Concept of biomolecules</i>	
<ul style="list-style-type: none"> • Carbohydrates: definition, properties of monosaccharide, disaccharide and polysaccharides • Lipids: biological significance, classification (simple, compound and derived lipids) • Amino acids: definition, physical and chemical properties of amino Acids, classification, structure • Proteins: Biological significance, peptide bond, classification of proteins. • Nucleic acids: components of nucleic acids, sugars, purines and pyrimidines, nucleosides and nucleotides • DNA: structure and properties • RNA: structure, types and properties 	33
<i>Genetic code and its properties</i>	
	2
Total	90

Topics	Lectures Allotted
	<i>(In hrs)</i>
<i>Introduction to computer system</i>	
<ul style="list-style-type: none"> • Definition, characteristics, limitations and concept • Classification based on size and purpose • Concept of System Software Hardware storage device, Character User Interface, Graphical User Interface, Operating System- 	15
types, multitasking.	
<i>Structure of computer and internet</i>	
<ul style="list-style-type: none"> • Block diagram and functions of units Computer peripherals and memory: Input units and output units, their functions • Primary storage (RAM) and secondary storage devices (ROM Pen drive, DVD, CD) • Operating systems: windows, Linux, Server • Internet and networking: Current status, applications • LAN, WAN, MAN, WWW and MODEM 	25
<i>Introduction to bioinformatics:</i>	
<ul style="list-style-type: none"> • Definition, history and concept of bioinformatics • Aims and tasks of bioinformatics • Areas of bioinformatics 	6
<i>Computers and internet in bioinformatics</i>	
<ul style="list-style-type: none"> • Computers and programs, • Concept of programming languages • Operating systems: Windows, LINUX, UNIX, MAC • Internet: Access, connectivity, world wide web 	20
<i>Biological databases and searching</i>	
<ul style="list-style-type: none"> • Types of database: Classification; Primary, secondary databases • Nucleic acid databases: GenBank, EMBL, DDBJ • Protein databases: Swiss-Prot, PDB • Sequence retrieval system: SRS 	24
Total	
90	

BI 103: Lab course

<i>Lab work</i>	Periods allotted (in hrs)
Computer basics; hardware, connection cables, typing, Windows 7/8	12
Working with MS-Office software Assignments in MS- Word Creating new documents, typing, deleting, selecting text, undo, redo, Formatting text – auto format, formatting, insertion of table characters, drop caps, Paragraphs, line spacing, margins, page setup, headers and footers, Writer’s tools – spelling checker, auto format, auto correct, find and replace, Mail merge – Data source, Main document	6
Assignments in MS-PowerPoint Creating slides, insertion of text, picture, table, charts etc., custom Animation, slide	6
transaction Assignments in MS-Excel Creating worksheet, Graphs, resizing graphs, formulas, if statement, types of Functions, frequently used mathematical and statistical functions	6
Assignments in MS-Access – creating database, forms and reports	8
Creating and editing files notepad and notepad++	4
Basic commands in MS-DOS program (CUI)	4
Learning the intranet system in the laboratory and getting its characteristics	4
Understanding the structure of Networking, LAN, WAN, MAN	6
Introduction to internet, WWW and web browsers and their applications	4
Internet surfing and searching information, downloading and installing	

Software	8
Accessing google scholar	8
Searching scientific information using NCBI using ENTERZ engine	10
Retrieval of data from SwissProt Data Bank	10
Introduction to literature database – PubMed	10
Exploring protein sequence database and downloading protein sequence	6
Exploring nucleic acid sequence database and downloading in FASTA format	8
	<i>Total</i> 120

References:

1. Dubey R.C. and Maheshwari D.K. 2004, Practical Microbiology, S.Chand and Co. Delhi.
2. Aneja K.R. (1996) Experiments in Microbiology, 3rd Edition Wishwa Prakashan, New Delhi.
3. Deshmukh A.M. (1997) 1st Edition, Handbook of Media, Stains and reagents in Microbiology Pama Publications.
4. Gaud R.S. and Gupta G.D. Practical Microbiology, Nirali Prakashan, Pune
5. Parija S.C., Text Book of Practical Microbiology Ahuja Publishing House, New Delhi.
6. Fundamentals of computers -V. Rajaraman
7. Computer Fundamentals - P.K. Sinha
8. Computer Fundamentals (Architecture and Organization) -B. Ram
9. Microsoft Office 2000 – Vipra Computers
10. Digital Fundamentals - Floyd
11. Digital Principles and Applications - A. P. Malvino & D.P.Leach (TMH)
12. Modern digital Electronics (2nd Edn.) R. P. Jain
13. Bioinformatics - Computational Molecular Biology by Zvia Agur.
14. Basic bioinformatics by Ignacimuthu.
15. An introduction to bioinformatics by Vikramsingh, Narosa Publ



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Certificate in Bioinformatics (CGPA Pattern)

Examination held in May 2021

Student Name : Kokarde Yash Sunil

College Name : R. C. Patel Arts Commerce and Science College, Shirpur

Seat Number : 211101

Exam Centre : Shirpur (240051)

Paper Code	Paper Name	AM	Credits (Max.)	Marks Obtained
CCBI 101	Fundamentals of Biology	TH	6.0	87
CCBI 102	Introduction to Bioinformatics	TH	6.0	90
CCBI 103	Lab Course	PR	8.0	89

Result: Pass

CGPA: 5.95

Grade: A



Yash Sunil
Co-ordinator

Abbreviations:

AM: Assessment Methods, **P:** Pass, **F:** Fail, **AB:** Absent, **RR:** Result Reserved, **TH:** Theory, **PR:** Practical, **O:** Outstanding Grade

॥ अंतरी पेटवू ज्ञानज्योत ॥

Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon



1990
'A' Grade
NAAC Re-Accredited
(3rd Cycle)

Jalgaon (M.S.), INDIA

*We, the Board of Deans, Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon*

&

The Principal

R. c. Patel Arts, Commerce and science college, Shirpur
do, hereby, certify that,

Mr./Ms. Agrawal Saloni Ravindra

*has pursued a course of study approved by the Kavayitri Bahinabai
Chaudhari North Maharashtra University, Jalgaon
and has passed the requisite examination held in Dec 2020
with A grade and found duly qualified for the award of*

Certificate in

Bioinformatics

Which is conferred on ~~him~~ / her on ^{Feb} October 1st, 2021

In testimony whereof is set the seal and signatures of authorities.

Seal
Principal



Dean
Dean

A - 05662

College Name : R.C.Patel Arts, Commerce & Science College, Shirpur

Title of the Course : Certificate Course in textile Chemistry

Aims/objectives of the Course : To aware the students about Textile chemistry, their applications & career in textile industries.

Duration of Course : 1 Year

Fees structure : 1000/

Course structure : Paper-I- Applied Chemistry for Textile Industries
 Paper-II- Applied Chemistry of dyes & Auxiliaries
 Paper-III- Lab Course

Eligibility for admission : Diploma course in Textile chemistry

Skeleton of Course :

Sr. No.	Paper	Name of the subject	Theory/ Practical Course	Teaching Hrs	Max. Marks Allotted			Passing			Credit
					External	Internal	Total	External	Internal	Total	
1	Paper-I	Applied Chemistry for Textile Industries	Theory	90	60	40	100	24	16	40	6
2	Paper-II	Applied Chemistry of dyes & Auxiliaries	Theory	90	60	40	100	24	16	40	6
3	Paper-III	Lab course	Practical	120	60	40	100	24	16	40	6

Minimum Staff : 03

Mode of examination : Internal & External (Theory & Practical)

Details of Syllabus : Enclose the syllabus copy

List of Admitted Students for "Certificate Course in Textile Chemistry"

For the Academic Year 2020 -21

Name of College: R. C. P. A. C. S. College, Shirpur
 Name of Career Oriented Course: Certificate Course in Textile Chemistry
 Academic Year: 2020-2021
 Intake Capacity: 60

Sr. No.	Name of Student	Gender	Category	Education Qualification	Year of passing	Presently admitted	Remark (if any)
1.	Banjara Shilpa Bhatusing	Female	NT	XII Science	2020	F. Y. B. Sc.	
2.	Bhamare Dhanashri Kailas	Female	OBC	XII Science	2020	F. Y. B. Sc.	
3.	Chaudhari Ronak Pravin	Male	OBC	XII Science	2020	F. Y. B. Sc.	
4.	Deore Harshadip Bhagwan	Male	OBC	XII Science	2020	F. Y. B. Sc.	
5.	Girase Darshana Ravindrasing	Female	OPEN	XII Science	2020	F. Y. B. Sc.	
6.	Gujar Raj Sunil	Male	OBC	XII Science	2020	F. Y. B. Sc.	
7.	Koli Devyani Raju	Female	SBC	XII Science	2020	F. Y. B. Sc.	
8.	Patel Durgesh Lokesh	Male	OBC	XII Science	2020	F. Y. B. Sc.	
9.	Patil Mahesh Sunil	Male	OBC	XII Science	2020	F. Y. B. Sc.	
10.	Patil Mayur Amol	Male	OBC	XII Science	2020	F. Y. B. Sc.	
11.	Patil Pranali Pradip	Female	OBC	XII Science	2020	F. Y. B. Sc.	
12.	Patil Rohan Dattatray	Male	OBC	XII Science	2020	F. Y. B. Sc.	
13.	Patil Vishal Kishor	Male	OBC	XII Science	2020	F. Y. B. Sc.	
14.	Pawar Neha Sharad	Female	OBC	XII Science	2020	F. Y. B. Sc.	

Certificate

This is to certify that the document regarding educational qualifications of the above students have been verified and found correct. The students mentioned in the list are eligible for the admission to the above mentioned course as per University Ordinance-181.


 Co-ordinator
 Mrs. Rajshri B. Chaudhari




 Principal
 Dr. D. R. Patil

For office use only

Application for the course - CTC

Acad. Year: 2020-2021



R. C. Patel Educational Trust's

R.C. Patel Arts, Commerce and Science College

Shirpur, Dist - Dhule, M.S. 425 405

(NAAC Accredited Institute)

To,
The Principal
R. C. Patel Arts, Commerce and Science College,
Shirpur

Sir,
I wish to get admitted to as a student for the Certificate Course of Textile Chemis

(Name and Signature of Candidate)

PARTICULARS OF CANDIDATE

- Name in full : patel Durgesh Lokesh.
(Surname first) Surname Name Father's/Husband's Name
- Address for correspondence : At. post kharde (Bk) Tal Shirpur
Dist - Dhule
- Email Id : dipatel2002@gmail.com.
- Ph.No./Mobile No. : 7798470960, 7666390064
- Father's/Husband's name with address : Patel ~~Durgesh~~ Lokesh kaju
At. kharde (Bk) . Tal. Shirpur . Dist. Dhule
- Sex (Male/Female) : Male
- Nationality : Indian
- Date of birth (dd/mm/yyyy) : 26/08/2002
- Put the tick (✓) mark(s) in the appropriate box(es) applicable in your case.

SC	ST	DT	NT-1	NT-2	NT-3	SBC	OBC	OPEN	P.H.	D.S.P
							✓			

P.H. : Physically handicapped ; D.S.P. : Ward of Defense Service Person

॥ अंतरी वेदु ज्ञानज्योत ॥

Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon



Jalgaon (M.S.), INDIA

We, the Board of Deans, Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon

&

The Principal

R. C. Padel Arts, Commerce & Science College, Surpur

do, hereby, certify that,

Mr./Ms. Rajput Priyanka Komalasing

has pursued a course of study approved by the Kavayitri Bahinabai
Chaudhari North Maharashtra University, Jalgaon
and has passed the requisite examination held in **Dec 2020**
with 'A' grade and found duly qualified for the award of

Certificate in

Textile chemistry

Which is conferred on him / her on **Feb**
October 1st, 2021

In testimony whereof is set the seal and signatures of authorities.

Debate
Principal



[Signature]
Dean



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Certificate course in Textile Chemistry

Examination Held in May -2021

Student Name: Chaudhari Ronak Parvin

College Name: R.C.Patel Arts Commerce and Science College, Shirpur

Seat Number: CTC -01

Paper Code	Paper Name	AM	Credit (Max.)	Marks Obtained
CTC- 101	Applied chemistry for textile industries	TH	6	89
CTC -102	Applied chemistry of dyes and Auxiliaries	TH	6	83
CTC-103	Lab Course	PR	8	94

Result: Pass

CGPA: 6.15

Grade: O



Co-ordinator

Abbreviations:

AM: Assessment Methods, P: Pass, F: Fail, AB: Absent, RR: Result Reserved, TH: Theory, PR: Practical, O: Outstanding Grade

College Name : R.C.Patel Arts, Commerce & Science College, Shirpur

Title of the Course : Diploma Course in textile Chemistry

Aims/objectives of the Course : To aware the students about Textile chemistry, their applications & career in textile industries.

Duration of Course : 1 Year

Fees structure : 1000/

Course structure : Paper-I- Chemistry of Polymers in Textile Industries
 Paper-II- Chemistry of Fibres in Textile Industries
 Paper-III- Lab Course

Eligibility for admission : Certificate course in Textile chemistry

Skeleton of Course :

Sr. No.	Paper	Name of the subject	Theory/ Practical Course	Teaching Hrs	Max. Marks Allotted			Passing			Credit
					External	Internal	Total	External	Internal	Total	
1	Paper-I	Chemistry of Polymers in Textile Industries	Theory	90	60	40	100	24	16	40	6
2	Paper-II	Chemistry of Fibres in Textile Industries	Theory	90	60	40	100	24	16	40	6
3	Paper-III	Lab course	Practical	120	60	40	100	24	16	40	6

Minimum Staff : 03

Mode of examination : Internal & External (Theory & Practical)

Details of Syllabus : Enclose the syllabus copy

R.C.Patel Art's, Commerce & science College, Shirpur

DTC- 101- Chemistry of Polymers in Textile Industries

Paper- I	THEORY	Contact Hrs- 90
1. Basic Determinants of Fibre Forming Polymers:		(20 Hrs)
Importance of polymer science. Various applications of polymers. Classification of polymers. Definition of monomer, oligomer, high polymer, mesomer, cohesive energy density, solubility parameter, glass transition temperature, functionality and degree of polymerization.		
2. Condensation Polymerization:		(15 Hrs)
Mechanism, types, feasibility, essential requirements and importance of condensation polymerization.		
3. Mechanism of Polymers:		(20 Hrs)
Nomenclature, Dyestuff chemistry, Types of dyes & pigments, Manufacturing of dyes.		
1. Technology of Textile Polymers:		(20 Hrs)
Characterization of polymers by different physical techniques such as DTA, DSC, TGA, IR, X-Ray diffraction		
2. Developments in polymers for textiles:		(15 Hrs)
Synthetic polymers, Polymer waste and techniques of utilisation.		

REFERENCE BOOKS:

1. Polymer science- V. R. Gowarikar
2. Natural Polymer man-made Fibres, Carrol and Porczynski C.Z., National Trade Press Ltd., London, 1965.
3. Visco-Elastic Properties of Polymers, Ferry, J.D., John Wiley and Sons, New York, 3rd edition, 1980.
4. Textbook of Polymer Science, Bill Meyer F.W., John Wiley and Sons, New York, 3rd Edition, 1984.
5. Vogel's Textbook of Quantitative chemical analysis- Jeffry, Basset.

List of Admitted Students for "Diploma Course in Textile Chemistry"

For the Academic Year 2020 -21

Name of College: R. C. P. A.C. S. College, Shirpur
Name of Career Oriented Course: Diploma Course in Textile Chemistry
Academic Year: 2020-2021
Intake Capacity: 60

Sr. No.	Name of Student	Gender	Category	Education Qualification	Year of passing	Presently admitted	Remark (if any)
1.	Chaudhari Sunaina Ramkrushna	Female	OBC	CTC	2020	S. Y. B. Sc.	
2.	Lambole Pinal Mahendra	Female	SC	CTC	2020	S. Y. B. Sc.	
3.	Maniyar Firozkhan Sikandarkha	Mala	OBC	CTC	2020	S. Y. B. Sc.	
4.	Patel Bhupesh Chandrakant	Male	OBC	CTC	2020	S. Y. B. Sc.	
5.	Patel Labhoday Vijay	Male	OBC	CTC	2020	S. Y. B. Sc.	
6.	Patil Dipraj Vishwas	Male	OBC	CTC	2020	S. Y. B. Sc.	
7.	Patil Gaurav Dilip	Male	OBC	CTC	2020	S. Y. B. Sc.	
8.	Patil Manohar Tarachand	Male	OBC	CTC	2020	S. Y. B. Sc.	
9.	Patil Pramod Rajaram	Male	OBC	CTC	2020	S. Y. B. Sc.	
10.	Patil Tejas Uddhav	Male	OBC	CTC	2020	S. Y. B. Sc.	
11.	Patil Vaibhav Sunesh	Male	OBC	CTC	2020	S. Y. B. Sc.	
12.	Pawar Shubham Kailas	Male	OBC	CTC	2020	S. Y. B. Sc.	

12.	Patil Rohan Dattatray	Male	OBC	XII Science	2020	F. Y. B. Sc.	
13.	Patil Vishal Kishor	Male	OBC	XII Science	2020	F. Y. B. Sc.	
14.	Pawar Neha Sharad	Female	OBC	XII Science	2020	F. Y. B. Sc.	

Certificate

This is to certify that the document regarding educational qualifications of the above students have been verified and found correct. The students mentioned in the list are eligible for the admission to the above mentioned course as per University Ordinance-181.


 Co-ordinator
 Mrs. Rajshri B. Chaudhari




 Principal
 Dr. D. R. Patil

॥ अंतरी पेटवू ज्ञानज्योत ॥

Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon



Jalgaon (M.S.), INDIA

*We, the Board of Deans, Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon*

&

The Principal

*R.C. patel, A.C.S. College, Shirpur.
do, hereby, certify that,*

Mr./Ms.

*Rajput Priyanka Komalsing
has pursued a course of study approved by the Kavayitri Bahinabai
Chaudhari North Maharashtra University, Jalgaon
and has passed the requisite examination held in Oct-2021
with O grade and found duly qualified for the award of*

Diploma in

Textile Chemistry

Which is conferred on him / her on ^{Dec} ~~October~~ 1st, 2021

In testimony whereof is set the seal and signatures of authorities.

Beatali
Principal



[Signature]
Dean



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Diploma in Textile Chemistry
Examination Held in May-2021

Student Name: **Chaudhari Sunaina Ramkrushna**

College Name: **R.C.Patel Arts Commerce and Science College, Shirpur**

Seat Number: **DTC 01**

Paper Code	Paper Name	AM	Credit (Max.)	Marks Obtained
DTC-101	Chemistry of Polymer in Textile Industries	TH	6	90
DTC-102	Chemistry of Fibres in Textile Industries	TH	6	92
DTC-103	Lab Course	PR	8	91

Result: **Pass**

CGPA : **6.10**

Grade: **O**



Y. P. S.

Co-ordinator

Abbreviations:

AM: Assessment Methods, **P:** Pass, **F:** Fail, **AB:** Absent, **RR:** Result Reserved, **TH:** Theory, **PR:** Practical, **O:** Outstanding Grade

R.C.Patel Art's, Commerce & science College, Shirpur

ADC- 101- Polymers in Textile Industries

Paper-I
Contact Hrs- 90

THEORY

1. Fiber: (10Hrs)

Fiber forming polymers and their requirement, chemistry of natural & synthetic fibrous polymer classification, requirements for fiber forming polymers, essential & desirable properties of textile fibers, essential properties, classification of fibers .

2. Measurement of physical characteristics of cotton : (20 Hrs)

viz. length, fineness, maturity, bundle strength, colour and foreign matter including principle, construction, operation, and calibration of the equipment in common use.

3. Mechanical properties of fibres (20 Hrs)

relation between structure and mechanical properties of fibres, Measurement of physical properties of man-made fibres i.e. length, denier, strength, elongation, modulus, work of rupture, crimp, spin finish, fibre quality index etc.

4.Non-fibrous Polymers: (20 Hrs)

Introduction, chemistry of Gum, Starch, Proteins, enzymes.

5.Green chemistry: (10 Hrs)

Introduction, importance & need, environmentally benign approaches in chemistry.

6.Preparation of Textile Industrial visit report. (10 Hrs)

REFERENCE BOOKS:

1. Polymer science- V. R. Gowarikar
2. Physical chemistry by Atkins.
3. Technology & Dyeing by Shenai.
4. Textbook of Polymer Science, Bill Meyer F.W., John Wiley and Sons, New York, 3rd Edition, 1984.

R.C.Patel Art's, Commerce & science College, Shirpur

ADC- 103- Practical Course

Paper- III

LAB COURSE

1. Dyeing of cotton hand with hot brand reactive dye.
2. Dyeing of cotton hand with vinyl sulphone reactive dye.
3. Dyeing of cotton hand with vat colors.
4. Dyeing of cotton hand with sulphur black.
5. Dyeing of cotton hand with naphthol color.
6. Determination of strength of formaldehyde solution.
7. Binary organic mixture.
8. Binary organic mixture.
9. Binary organic mixture.
10. Working on Microsoft Word.
11. Working on Chemdraw .
12. Working on Structure Analysis.
13. Introduction of Internet
14. To determine % of Acetic acid.
15. To determine solid content of dye fixing agents.
16. To determine solid & active content of softeners.

List of Admitted Students for "Advance Diploma Course in Textile Chemistry"

For the Academic Year 2020 -21

Name of College: R. C. P. A.C. S. College, Shirpur
 Name of Career Oriented Course: Advance Diploma Course in Textile Chemistry
 Academic Year: 2020- 2021
 Intake Capacity: 60

Sr. No.	Name of Student	Gender	Category	Education Qualification	Year of passing	Presently admitted	Remark (if any)
1.	Chaudhari Aditya Arun	Male	OBC	DTC	2020	M.Sc.	
2.	Chaudhari Rohit Pramod	Male	OBC	DTC	2020	M.Sc.	
3.	Girase Neha Gajendra	Female	OPEN	DTC	2020	M.Sc.	
4.	Girnar Mahesh Prakash	Male	OBC	DTC	2020	M.Sc.	
5.	Kalal Chandresh Devkrishna	Male	OBC	DTC	2020	M.Sc.	
6.	Khatik Rehanshekh Mahemud	Male	OPEN	DTC	2020	M.Sc.	
7.	Mahajan Srushti Ashok	Female	OBC	DTC	2020	M.Sc.	
8.	Patel Rinalkumar Kashinath	Male	OBC	DTC	2020	M.Sc.	
9.	Patil Ashwini Kailas	Female	OBC	DTC	2020	M.Sc.	
10.	Patil Gaurav Vijay	Male	OBC	DTC	2020	M.Sc.	
11.	Patil Harshada Madhukar	Female	OBC	DTC	2020	M.Sc.	

12.	Patil Jitendra Pralhadrao	Male	OBC	DTC	2020	M.Sc.	
13.	Patil Piyush Sanjay	Male	OBC	DTC	2020	M.Sc.	
14.	Patil Prashant Krishna	Male	OBC	DTC	2020	M.Sc.	
15.	Patil Prem Sharad	Male	OBC	DTC	2020	M.Sc.	
16.	Patil Sagar Kantilal	Male	OBC	DTC	2020	M.Sc.	
17.	Rokade Sagarkumar Rajubhai	Male	SC	DTC	2020	M.Sc.	
18.	Sanke Shital Bansilal	Female	SC	DTC	2020	M.Sc.	
19.	Suryawanshi Devendra Suresh	Male	OBC	DTC	2020	M.Sc.	
20.	Wani Yashodip Sunil	Male	OPEN	DTC	2020	M.Sc.	
21.	Warude Swapnil Dadaji	Male	OBC	DTC	2020	M.Sc.	

*DTC = Diploma Course in Textile Chemistry

Certificate

This is to certify that the document regarding educational qualifications of the above students have been verified and found correct. The students mentioned in the list are eligible for the admission to the above mentioned course as per University Ordinance-181.


Co-coordinator

Mr. Kantilal A. Pawara




Principal

Dr. D. R. Patil

R. C. Patel. A. C. S. College, Shirpur
Advanced Diploma Course in Textile Chemistry 2020-2021
Attendance sheet

Sr. No.	Name of Students	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
1.	Chaudhari Aditya Arun	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2.	Chaudhari Rohit Pramod	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3.	Girase Neha Gajendra	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4.	Girnar Mahesh Prakash	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5.	Kalal Chandresh Devkrishna	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6.	Khatik Rehanshekh Mahemud	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7.	Mahajan Srushti Ashok	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8.	Patel Rinalkumar Kashinath	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
9.	Patil Ashwini Kailas	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
10.	Patil Gaurav Vijay	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
11.	Patil Harshada Madhukar	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
12.	Patil Jitendra Pralhadrao	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
13.	Patil Piyush Sanjay	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
14.	Patil Prashant Krishna	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
15.	Patil Prem Sharad	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
16.	Patil Sagar Kantilal	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
17.	Rokade Sagarkumar Rajubhai	A	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
18.	Sanke Shital Bansilal	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
19.	Suryawanshi Devendra Suresh	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
20.	Wani Yashodip Sunil	A	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
21.	Warude Swapnil Dadaji	A	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P



R. C. Patel A. C. S. College, Shirpur



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Advance Diploma in Textile Chemistry

Examination Held in May-2021

Student Name: Patil Sagar Kantilal

College Name: R.C.Patel Arts Commerce and Science College, Shirpur

Seat Number: ADC -10

Paper Code	Paper Name	AM	Credit (Max.)	Marks Obtained
ADC-101	Polymers in Textile industries	TH	6	86
ADC-102	Chemistry in Textile industries	TH	6	87
ADC-103	Lab Course	PR	8	86

Result: Pass

CGPA: 5.10

Grade: A



Co-ordinator

Abbreviations:

AM: Assessment Methods, **P:** Pass, **F:** Fail, **AB:** Absent, **RR:** Result Reserved, **TH:** Theory, **PR:** Practical, **O:** Outstanding Grade

॥ अंतरी पेटवु ज्ञानज्योत ॥

Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon



Jalgaon (M.S.), INDIA

We, the Board of Deans, Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon

&

The Principal

R. C. Patel A.C.S. College, Shirpur

do, hereby, certify that,

~~Mr./Ms.~~

Mahajan Prem Sunil

has pursued a course of study approved by the Kavayitri Bahinabai
Chaudhari North Maharashtra University, Jalgaon
and has passed the requisite examination held in **Dec 2020**
with 'O' grade and found duly qualified for the award of


Advanced Diploma in
Textile chemistry

Which is conferred on him / her on ~~October~~ ^{Feb} 1st, 2021

In testimony whereof is set the seal and signatures of authorities.


Principal




Dean

**Kaviyatri Bahinabai Chaudhari North Maharashtra
University, Jalgaon
Ordinance 181**

**College
R. C. Patel Arts, Commerce and Science College, Shirpur**

**Name of career oriented course
Certificate Course in Women Studies**

**Faculty
Arts, Commerce and Science**

**Academic year
(2020-21)**

K.B.C. North Maharashtra University, Jalgaon Ordinance 181

College name	:	R. C. Patel Arts, Science and Commerce College, Shirpur
Title of the course	:	Certificate Course in Women Studies
Aims/Objective of the course	:	To empower women in field of education, health, women laws, gender sensitization
Duration of the course	:	1 Year
Fees structure	:	Rs. 500/-
Course structure	:	Paper I: Gender and Education Paper II: Women Work and Employment Paper III: Field Work
Eligibility for admission	:	XIIth

Skeleton of course:

Sr No	Paper	Name of subject	Theory / Practical	Teaching hours	Maximum marks allotted			Passing			Credit
					External	Internal	Total	External	Internal	Total	
1.	Paper I	Gender and Education	Theory	90	60	40	100	24	16	40	6
2.	Paper II	Women Work and Employment	Theory	90	60	40	100	24	16	40	6
3.	Paper III	Field Work	Practical	120	60	40	100	24	16	40	8

CCWS 101: Gender and Education

Topics	Lectures allotted (in hrs)
Unit – I Introduction to Gender Sensitization	
<ul style="list-style-type: none"> • Key concepts in Gender studies. • Need, Scope and challenges of Women’s Studies – Women’s Studies as an academic discipline. Women’s Studies to Gender Studies, Need for Gender Sensitization. • National Committees and Commissions for Women. 	22
Unit – II Gender and Education	
<ul style="list-style-type: none"> • Women’s Education – Gender diversities and disparities in enrolment, Curriculum content, Dropouts, profession and Gender. • Gendered Education- Family, Culture, Gender roles, Gender Identities. • Education for the Marginalized Women. • Recent Trends in Women’s Education – Committees and Commissions on Education. • Vocational education and skill Development for women. 	22
Unit – III Gender and Media	
<ul style="list-style-type: none"> • Discourse on Women and Media Studies- Mainstream Media, Feminist Media. • Coverage of Women’s issues and issues of women in Mass Media and Media Organizations (Audio-Visual and Print media). • Digital Media and legal protection. • Alternative Media – Folk Art, Street Play and Theatre. • Indecent Representation of Women (Prohibition) Act, 1986, Impact of media on women. 	24
Unit – IV Gender and Entrepreneurship	
<ul style="list-style-type: none"> • Concept and meaning, Importance of Entrepreneurship, Entrepreneurial traits, Factors contributing to Entrepreneurship, enabling environment, small Enterprises, women in agri-business. • Gender and emerging Technology – Impact. • Self-help Groups and Micro Credit. • Gender mainstreaming, Gender budgeting, planning and Analysis. 	22
Total	90

CCWS 102: Women Work and Employment

Topics	Lectures allotted (in hrs)
<hr/> Unit – I Introduction to Women’s Education	
<ul style="list-style-type: none">• Women’s Education – Gender bias in enrolment – Curriculum content – Dropouts.• Negative capability in Education – Values in Education – Vocational Education.• Recent Trends in Women’s Education – Committees and Commissions on Education.• Adult Literacy and Non – formal education for women’s development.	20
<hr/> Unit – II Concept of Work	
<ul style="list-style-type: none">• Concept of Work – Productive and non – productive work – Use• Value and market value.• Gender Division of Labour – Mode of Production – Women in organized and unorganized sector.• Training, skills and income generation.• New Economic Policy and its impact on Women’s Employment – Globalization – Structural Adjustment Programs	22
<hr/> Unit – III Women and Health	
<ul style="list-style-type: none">• Gender in Health – Health status of women in India – Mortality and Morbidity factors influencing health – Nutrition and health – HIV and AIDS control programme.• National Health and Population Policies and Programmes – Maternal and Child Health (MCH) to Reproductive and Child health approaches, Issues of old age.• Women and Environment – Nature as feminine principle – Basic needs in Rural and Urban Environments – Care and management of natural resources – Depletion of natural resources – Sustainable environment and impact on women.	24
<hr/> Unit – IV Women and Media	
<ul style="list-style-type: none">• Role of women in media – Development of Communication Skills – Alternative Media – Folk Art, Street Play and Theatre – Women as change agents.• Indecent Representation of Women (Prohibition) act, 1986 – Impact of	24

media on women.

- Indian Constitution and provisions relating to women.
- Personal laws – Labour Laws – Violence against, women – Legal protection – Family Courts – Enforcement machinery – Police and Judiciary.
- Human Rights as Women’s Rights

Total 90

CCWS 103: Field Work

-
- Field work specially related to women’s problem, report submission and oral presentation
-

References:

- Domestic Women Workers in India, Seepana Prakasham, Shipra Publication, 2012,202P
- Women’s Studies in India by Maithreyi Krishna Raj
- Indian Women in History and Culture, Prof. Geraldine Forbes
- Women’s Work in Globalizing India, Never Done and Poorly Paid Ghosh J.,New Delhi, Women Unlimited, 2009
- Journal of Gender Social Policy and Law
- Susan S. Wadly, “Women and the Hindu Tradition”, Signs, 3:1 (August 1977)
- Butalia, U. and T Sarkar, (eds.), Women and the Hindu Right, New Delhi, Kali for women, 1996
- Sunder Rajan, R., The Scandal of the State: Women, Law and Citizenship in Postcolonial India, New Delhi, Permanent Black, 2004.
- Domestic Violence Against Women: Legal Protection Legislative and Judicial Aspects, Nitu Nawal and R.K.Sharma, Regal Publications, 2013 XVI, 462P

R.C.Patel Arts, Commerce & Science College, Shirpur. Dist. Dhule.

Subject: CCWS-102 - Women Work & Employment Exam. Date: 10.5.22

Class: Women studies Internal exam Time: 12 to 2

Sr.No	Exam. Seat No.	Student's Name	Sign
1	212209	Ghisale Tejal Vinod	
2	212207	Shimpi pooja Jayvant	
3	212219	Kanade Harshada Sanjay	
4	212212	Girase Rutika Komal sing	
5	212201	Mahajan Archana Mahendra	
6	212218	Patil Mansi Gaiendra	
7.	212203	Mali Yogita Rohidas	
8.	212213	Koli Dipali shivaji	
9	212215	Pagare Anjali vijay	
10	212205	Mali Yamini Jagesh	
11	212210	Thangar Karishma sudhakar	
12	212216	Patel Sanika vilas	
13	212214	Vishakha shashi Nikam	
14	212217	Patil Harshali omkardeshwar	
15	212202	Bhamare Sanjana Jitendra	
16	212206	Kamalpreet Kaur Chauhan	
18	212204	Kapadne Deepika Suresh	
19.	212223	Gavali Darshana Ramesh	
20.	212222	Shaikh Amal Farooque	
21	212208	Borse Asmita Rakesh	
22	212219	Kanade Harshada Sanjay	
23	212220	Pawar Jagauti Chandrapu	
24	212221	Beldar Sapna Himabai	
25			
26			

Sign of Jr. Supervisor



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Certificate Course in Women Studies CGPA Pattern)

Examination held in May 2021

Student Name : Girase Rutika Komalsing

College Name : R. C. Patel Arts Commerce and Science College, Shirpur

Seat Number : 212212

Exam Centre : Shirpur (240051)

Paper Code	Paper Name	AM	Credits (Max.)	Marks Obtained
CCWS 101	Gender and Education	TH	6.0	88
CCWS 102	Women Work and Employment	TH	6.0	83
CCWS103	Field Work	FW	8.0	85

Result: Pass

CGPA: 5.45

Grade: O



Handwritten signature
Co-ordinator

Abbreviations:

AM: Assessment Methods, **P:** Pass, **F:** Fail, **AB:** Absent, **RR:** Result Reserved, **TH:** Theory, **PR:** Practical, **O:** Outstanding Grade

**K.B.C. North Maharashtra University,
Jalgaon**

**Advance Diploma in
PLANT TISSUE
CULTURE**

**Run by
R. C. Patel A. C. S. College, Shirpur
Under ordinance 181**

**Syllabus
A.Y-2020-21**

Level of diploma	Graduate diploma
Eligibility	As per ordinance 181
Duration	1 Year
Total Credits	20 Credits

ADPTC 101: Plant Tissue Culture and rDNA Technology

- 1. Mitochondrial and Chloroplast Engineering** **15**
 - 1.1 Chloroplast engineering: Brief account
 - 1.2 Design of vectors for chloroplast transformation
 - 1.3 Mitochondrial transformation
 - 1.4 Applications and limitations of chloroplast and mitochondrial engineering

- 2. Plant transformation and marker genes** **15**
 - 2.1 Antibiotic resistance genes- Neomycin phosphotransferase II (npt-II gene), Hygromycinpho sphotransferase (hpt-gene)
 - 2.2 Antimetabolite marker gene- Dihydrofolate reductase gene
 - 2.3 Herbicide resistance markers- Phosphinotricin acetyltransferase

- 3. Marker free transgenic Plants** **15**
 - 3.1 Reporter gene- Opine synthase, β - glucouronidase, green fluroscent protein, bacterialluciferase gene
 - 3.2 Production of marker free transgenic plant
 - 3.3 Clean gene technology

- 4. RDNA technology** **15**
 - 4.1 Benefits of transgenic crops
 - 4.2 Insect resistance plants through transgenic approach
 - 4.3 Herbicides resistance plants through transgenic approach

- 5. Recombinant DNA technology in plants improvement** **15**
 - 5.1 Resistance genes from microorganisms- Bt- toxins
 - 5.2 Resistance gene from higher plant- Proteinase inhibitors
 - 5.3 Virus resistance- coat protein mediated cross protection

- 6. Transgenic plants as bioreactor** **15**
 - 6.1 Carbohydrates
 - 6.2 Lipids
 - 6.3 Protein quality improvement

References:

1. Introduction to plant biotechnology - H. S. Chawla, III Edn, Oxford and IBH Publ.
2. Biotechnology, U Satyanarayana, Books and allied (P) Ltd
3. Plant tissue culture, Sunil Kumar and M P Singh, APH Publ.
4. Biotechnology-Tissue culture to proteomics, P C Trivedi, Pointer Publ.
5. Purohit S.S.(2002),Agricultural Biotechnology,Agrobios India, Jodhpur
6. De K.K.,(1998) An introduction to Plant Tissue Culture, New central book agencyPvt.Ltd,Calcutta
7. Bhojwani S. S. and Razdan M.K. (1983) Plant tissue culture theory and practice, Elsevier SciencePub., Amsterdam.

ADPTC 102: Applied Plant Tissue Culture

1. Tissue Culture and Crop Improvement	15
1.1 Micro propagation	
1.2 Virus irradiation	
1.3 Germplasm exchange	
2. Cost Cuttings in Tissue Culture	15
2.1 Low cost option for culture media	
2.2 Low cost option for bioreactor	
2.3 Low cost option for energy	
3. Horticulture and Floriculture Biotechnology	15
3.1 Concept of horticulture	
3.2 Techniques in horticulture	
3.3 Floriculture production through genetic modification	
4. Edible vaccines	15
4.1 Introduction and history	
4.2 Criteria for selection of plants as a vaccine	
4.3 Designing genes for insertion	
5. Food Safety	15
5.1 Transformed tissue culture and food safety	
5.2 Quarantine checking	
5.3 Challenges and issues	
5.4 Food security	
6. Intellectual Property Rights	15
6.1 Forms of protection: Copyright, Trademarks	
6.2 Patent: Patent application	
6.3 Patenting of biological material: Microorganisms, plant, animal	

References:

1. Introduction to plant biotechnology - H. S. Chawla, III Edn, Oxford and IBH Publ.
2. Plant tissue culture, Sunil Kumar and M P Singh, APH Publ.
3. Biotechnology-Tissue culture to proteomics, P C Trivedi, Pointer Publ.
4. Plant tissue culture, Rajender Singh, ALP Books.
5. Tissue culture, Rajendra Reddy, J P Abhay Shankar, Commonwealth Publ.
6. Ramawat K.G. (2004), Plant Biotechnology, S.Chand and Company Ltd., New Delhi.

ADPTC 103: Practical Course

Sr. No.	Practical name	Lecture Allotted
1.	Safety aspects in PTC lab	15
2.	Production of synthetic seeds from somatic embryo	18
3.	Isolation of chloroplast DNA	15
4.	Isolation of mitochondrial DNA	15
5.	Extraction of RNA from leaf tissue	15
6.	Study of root culture	15
7.	Study of another culture	15
8.	Study of mitosis in onion root tip	12
	Total	120

References:

1. Biotechnology procedures and experiments handbook, S.Harisha
2. Plant tissue culture, Kaylan Kumar De, New central book agency Pvt.Ltd., Calcutta
3. Aneja K.R. (1998), Experiments in Microbiology, Plant pathology, Tissue culture and Mushroomcultivation, Vishwa Prakashan, New age international (p) Ltd., New Delhi
4. Schmauder Hans Peter (1997), Methods in Biotechnology, Taylor and Francis, London.
5. Schuler M. A. and Zielinski R. E. (1989), Methods in Plant Molecular Biology.
6. Vyas S.P. and Kohli D.V. (2002), Methods in Biotechnology and Bioengineering, CBSPublishers and Distributors, New Delhi.

**K.B.C. North Maharashtra University,
Jalgaon
Ordinance 181**

**R. C. Patel Arts, Commerce and Science
College, Shirpur**

Name of career oriented course

Certificate Course in Plant Tissue Culture

Faculty

SCIENCE

Academic year

(2020-21)

College name	:	R. C. Patel Arts, Science and Commerce College, Shirpur
Title of the course	:	Certificate Course in plant tissue culture
Aims/Objective of the course	:	To make students acquaint about methods in plant tissue culture and their applications.
Duration of the course	:	1 Year
Fees structure	:	Rs. 1000/-
Course structure	:	Paper I: Fundamentals in Plant Physiology Paper II: Basics in Plant Tissue Culture Paper III: Lab Course
Eligibility for admission	:	12th Science

Skeleton of course:

Sr No	Paper	Name of subject	Theory / Practical	Teaching hours	Maximum marks allotted			Passing			Credit
					External	Internal	Total	External	Internal	Total	
1.	Paper I	Fundamentals in Plant Physiology	Theory	90	60	40	100	24	16	40	6
2.	Paper II	Basics in Plant Tissue Culture	Theory	90	60	40	100	24	16	40	6
3.	Paper III	Lab course	Practical	120	60	40	100	24	16	40	8

Minimum staff : 03

Mode of examination : Internal and external
(Theory and Practical)

Detail syllabus : Syllabus copy attached

CCPTC 101: Fundamentals in Plant Physiology

1. Plant Cell:	Lectures Allotted
Topics	
1.1 Plant cell organelles: structure and function Cell wall, plasma membrane, Endoplasmic reticulum, Vacuole, Golgi apparatus, Plastid & Nucleus	12
1.2 Storage granules	
1.3 Osmosis: Role in turgidity	
1.4 Homeostasis: concept and significance	
2. Plant water relation and transport:	
2.1 Absorption and movement of water: Theories of water translocation, Transpiration, Stomatal physiology.	
2.2 Nutrient Transport: Passive transport, Active transport, Permeability.	10
2.3 Conservation of water	
3. Photosynthesis:	
3.1 Photosynthesis: Concept, History,	
3.2 Photosynthetic apparatus: Chloroplast, Pigments	
3.3 Photosystem-I and Photosystem-II	
3.4 Light reaction: Photophosphorylation (cyclic and non-cyclic)	12
3.5 Dark reaction; C3 pathway or Blackmanns reaction or Calvin cycle	
3.6 Significance of photosynthesis	
4. Growth and development in Plants:	
4.1 Plant growth: Cell cycle: Mitosis	
4.2 Growth kinetics: Whole organs (S-shaped growth curve)	
4.3 Growth of plant organs: roots, stems, leaves, flowers, seeds and fruits	12
4.4 Morphogenesis, Juvenility, Totipotency	
4.5 Media nutrients and requirements of growth	
5. Plant Hormones:	
Concept of hormones and their role in Plant tissue culture	
5.1 Auxins: introduction, Mechanism of action, use as herbicides	
5.2 Cytokines: Introduction, Mechanism of Action,	
5.3 Gibberellins: Introduction, Mechanism of action, commercial uses of Gibberellins	10
5.4 Ethylene: Introduction, Action, Role in flowering.	
5.5 Abscisic acid (ABA): Introduction, Action, Role.	
6. Plant diseases	
6.1 Citrus Canker Powdery mildew in apple	
6.2 Whip Smuts of Sugarcane	12
6.3 Leaf spots in Tikka disease of groundnut	

6.4 Rots in cucurbits

CCPTC 102: Basics in Plant Tissue Culture

Topics	Lectures allotted
1. Introduction to PTC Laboratory:	
1.1 Introduction & Organization of PTC lab:	
1.2 Development of Tissue culture media	
1.3 Media constituents: Inorganic and organic nutrients, growth Hormones, gelling agents	14
1.4 Media preparation and methods of sterilization	
2. Totipotency and Cytodifferentiation:	
2.1 Totipotency: Introduction, Expression, significance	12
2.2 Cytodifferentiation: Introduction, Process, Factors affecting cytodifferentiation	
3. Organ culture:	
Different types of organ culture (principle, protocol, and Importance)	14
3.1 Root culture	
3.2 Leaf culture	
3.3 Meristem; shoot tip culture, flower culture	
3.4 Ovary culture	
3.5 Anther and pollen culture	
4. Callus culture:	
4.1 Callus culture: Introduction and principle	12
4.2 Characteristics of callus	
4.3 Process of callus formation	
4.4 Methods and significance of callus	
5. Somatic embryogenesis:	
5.1 Somatic embryogenesis: Introduction and principle and Significance	14
5.2 Methods in somatic embryogenesis	
5.3 Factors affecting on somatic embryogenesis	
5.4 Artificial seeds: development and uses	
6. Application of plant tissue culture:	
6.1 Micro propagation	12
6.2 Clonal propagation	
6.3 Production of genetically variable plants	
6.4 Plant pathology and plant tissue culture	
6.5 Plant breeding	
6.6 Production of useful biochemical	

CCPTC 103: Lab Course

Sr. No.	Lab course	Lectures allotted
1.	Overview to plant tissue culture laboratory.	08
2.	Preparation of stock solutions	08
3.	Preparation of growth media.	10
4.	Preparation and sterilization of explants	08
5.	Production of callus by using carrot/Clitoral ternate/ Hibiscus Rosa sinensis.	10
6.	shoot tip culture	08
7.	Study of somatic embryogenesis by using groundnut/ Wheat	08
8.	Initiation of cell suspension culture	12
9.	Study of micro propagation	08
10.	Study of transpiration	08
11.	Study of embryo culture	10
12.	Estimation of chlorophyll content from different plant leafs.	06
13.	Study of stomatal physiology.	08
14.	Study of cell cycle: various mitotic stages	08

References:

1. Kalyan Kumar De, Plant tissue culture.
2. Plant tissue culture, S. S. Bhojwani and M.K. Rajdhan.
3. Plant biotechnology and its application in tissue culture; Ashwini Kumar, Shikha Roy, IK International publication.
4. Plant physiology ; Fourth edition, Salisbury Ross, Thomson, Wadsworth publication
5. Plant physiology; C. P. Malik, Kalyani publication ,New Delhi – Ludhiana
6. Plant physiology; Second edition, G. Ray Noggle, George J. Fritz, Prentice Hall of India private limited.
7. Plant physiology; R.S.Mehrotra, Ashok aggrawal, Tata McGraw Hill.
8. Kalyan Kumar De, Plant tissue culture.
9. Plant tissue culture, S.S.Bhojwani and M.K. Rajdhan.
10. Plant biotechnology and its application in tissue culture; Ashwini Kumar, Shikha Roy, IK International publication.
11. Plant tissue culture, S.S. Purohit.

Lectures Attendance A.Y-20-21

Certificate Course in Plant Tissue Culture

Sr.No	Students Name				
1	GIRASE KRANTI PRAKASHSING				19/7/20
2	JADHAV MANJUSHA SANJAY				22/7/20
3	JADHAV PRIYANKA SUDHAM				29/7/20
4	KOLIKAVITA MADHUKAR				01/8/20
5	MAULE JUBER HARUN				09/8/20
					14/8/20
					16/9/20
					11/9/20
					04/11/20
					08/11/20
					16/11/20
					19/11/20
					03/11/21
					06/11/21
					16/11/21
					26/11/21
					10/2/21
					17/2/21



Department of Biotechnology
R.C.Patel Arts & Sci. College
Shripur, Dist. Dhule

Head,
[Signature]



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Certificate in Plant Tissue Culture (CGPA Pattern)

Examination held in May 2021

Student Name : Thorat Janhavi Kailas

College Name : R. C. Patel Arts Commerce and Science College, Shirpur

Seat Number : 212105

Exam Centre : Shirpur (240051)

Paper Code	Paper Name	AM	Credits (Max.)	Marks Obtained
CCPTC 101	Fundamentals in Plant Physiology	TH	6.0	90
CCPTC 102	Basics in Plant tissue culture	TH	6.0	92
CCPTC 103	Lab Course	PR	8.0	90

Result: Pass

CGPA: 6.10

Grade: O



Co-ordinator

Abbreviations:

AM: Assessment Methods, **P:** Pass, **F:** Fail, **AB:** Absent, **RR:** Result Reserved, **TH:** Theory, **PR:** Practical, **O:** Outstanding Grade

K.B.C. North Maharashtra University, Jalgaon
Ordinance 181

College
R. C. Patel Arts, Commerce and Science College, Shirpur

Name of career oriented course
Diploma in Bioinformatics

Faculty
SCIENCE

Academic year
(2020-21)

K.B.C. North Maharashtra University, Jalgaon Ordinance 181

College name	:	R. C. Patel Arts, Science and Commerce College, Shirpur
Title of the course	:	Diploma In Bioinformatics
Aims/Objective of the course	:	To make students acquaint about methods in bioinformatics and their applications in life sciences
Duration of the course	:	1 Year
Fees structure	:	Rs. 1000/-
Course structure	:	Paper I: Basics in cell Sciences Paper II: Fundamentals of Bioinformatics Paper III: Lab Course
Eligibility for admission	:	Certificate Course in Bioinformatics

Skeleton of course:

Sr. No.	Paper	Name of subject	Theory / Practical	Teaching hours	Maximum marks allotted			Passing			Credit
					External	Internal	Total	External	Internal	Total	
4.	Paper I	Basics in Cell Science	Theory	90	60	40	100	24	16	40	6
5.	Paper II	Fundamentals of Bioinformatics	Theory	90	60	40	100	24	16	40	6
6.	Paper III	Lab course	Practical	120	60	40	100	24	16	40	8

DBI 101: Basics in Cell sciences

Topics	Lectures allotted (in hrs)
Cell Organization:	
Prokaryotic cell: Structure & Organelles	
Plant cell: Structure & Organelles	
Animal cell: Structure & Organelles	
Golgi apparatus	
RER and SER	15
Mitochondria	
Plastids, vacuole	
Nucleus	
Endoplasmic reticulum	
Basics in Genetics:	
Concept of genes and genome	
Chromosome: Structure and composition (Histones & Nucleosome)	15
Mutation: Concept and types (Point, nonsense, frame shift, transitions, trans versions)	
Cell Cycle:	
Mitosis: Introduction, Steps, significance	
Meiosis: Introduction, Steps, significance	15
Differences Mitosis & Meosis	
Central Dogma of Molecular Biology :	
DNA réplication : Détails of réplication : Initiation, Elongation, Termination	
Transcription : Détails of transcription : Initiation, Elongation, Termination	15
Translation: Détails of translation: Initiation, Elongation, Termination	
Basics in Immunology:	
Background of Immune system, Concept of immunity	
Cells and organs of immune system	
Concept of antigen: Types of antigen, antigenic determinants	
Concept of Hapten; antigen and Immunogen	30
Concept of Antibody: Structure, types and functions (IgA, IgG, IgM, IgD and IgE)	
Overview of immune responses: CMI and humoral immune response	
Total	90

DBI 102: Fundamentals of Bioinformatics

Topics	Lectures allotted (in hrs)
Alignment and Comparisons of Sequence	
Study of single sequence	
Outline of Single sequence alignments: Pair wise alignments, Scoring matrix, PAM, BLOSUM, Gap penalty;	
Alignment types: Global and local alignment	
Alignment algorithms: Dynamic methods: Needleman-Wunsch algorithm, Smith-Waterman algorithm; Heuristic methods: FASTA, BLAST;	30
Multiple sequence alignments: ClustalW, ClustalX; PSI-BLAST: BLAST searches	
Gene studies	
Introduction to Gene prediction strategies	
Basics in Exon prediction	
Background in Protein prediction strategies	15
Basics in Coding sequence prediction Tools available for prediction of gene	
Proteins alignments	
Background of Protein structure alignments	
Secondary structure prediction strategies	
Three-dimensional structure determination	20
Comparison of protein structures Different structure alignment algorithms	
Data mining	
NCBI resources	
SRS	
OMIM tool	10
ENTREZ search engine	
Advanced search UniProt	
Outline to tools	
ClustalOmega	
ClustalW	
MEGA5	
Phylip package	15
JMol	
SPDBV	
Mol-Mol	
Total	90

DBI 103: Lab Course

Lab work	Periods allotted (in hrs)
Study of Sequence alignment using ClustalOmega	6
Study of Retrieving DNA/RNA sequence in FASTA file format from NCBI.	4
Searching and downloading pdb files from protein data bank.	4
Protein structure visualization using SPDBV	6
Search and retrieve protein data from UniProtKB/Swiss-Prot and UniProtKB/TrEMBL	4
Similarity searching using BLAST for DNA / protein sequence.	4
Sequence alignment using Needle / Water program	6
Exploring database at NCBI and querying the PUBMED database using the ENTREZ search engine	8
Sequence alignment using Needleman-Wunsch algorithm	6
Sequence alignment using Smith-Waterman algorithm	8
Multiple sequence alignment using BLAST	7
Searching for protein sequence alignments using pBLAST	5
Designing primers for given DNA sequence using online tools	8
Predicting protein properties from ExPASy server using 'ProtParam'	8
Protein sequence similarity search using FASTA at EBI	8
Practical based on DAMBE software	
Alignment of nucleic acid sequence to aligned amino acid sequence	4
Calculating amino acid frequency from given sequence	4
Determination of tRNA loop of given sequence	4
Extract secondary structure from a pdb file	4
Secondary structure prediction using CFSSP	4
Study of ProtParam	8
Total	120

References:

1. Singh Bharat, "Immunology", Pointer Pub, Jaipur.
2. Yadav .P.R,"Immunology", Dicoverly Pub House, New Delhi.
3. Coleman.R.M, Lombard.M.F, Sicard.R.E, Rencocca.N.J , "Fundamentals of Immunology" by W.C.Brown Pub,1989
4. S.C. Rastogi, Namita Mendirata, Parag Rastogi Bioinformatics concepts Skills and application, CBS publisher
5. D. Baxevanis and F. Oulette, (2002), "Bioinformatics: A practical guide to the analysis of genes and proteins", Wiley
6. Arthur M. Lesk, (2002), "Introduction to Bioinformatics" Oxford University
7. Alexis Leon and Mathews Leon Introduction to computers with MS –Office 2000 Tata Mcgrow Hill.
8. Bioinformatics - Computational Molecular Biology by Zvia Agur.
9. "Basic Bioinformatics" by Ignacimuthu.
10. An introduction to bioinformatics by vikramsingh, Narosa Publications.

Lectures Attendance A.Y-20-21
Diploma in Bioinformatics

Sr.No	Students Name	
1	PATIL GAYATRI SATISH	18/7/20
2	PATIL JAGRUTI GOPAL	23/7/20
3	PATIL MAHESH JIABRAO	21/7/20
		22/7/20
		24/7/20
		25/7/20
		27/8/20
		29/8/20
		20/9/20
		03/10/20
		09/10/20
		02/10/21
		09/10/21
		15/10/21
		25/10/21
		30/10/21
		02/12/21
		03/12/21



Head,
Department of Microbiology
R.C.Patel Arts & Sci. College
Shirpur, Dist-Dhule.

(Signature)



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Diploma in Bioinformatics (CGPA Pattern)

Examination held in May 2021

Student Name : Patil Apurva Nandkishor

College Name : R. C. Patel Arts Commerce and Science College, Shirpur

Seat Number : 211205

Exam Centre : Shirpur (240051)

Paper Code	Paper Name	AM	Credits (Max.)	Marks Obtained
DBI 101	Basics in Cell Sciences	TH	6.0	77
DBI 102	Fundamentals of Bioinformatics	TH	6.0	78
DBI 103	Lab Course	PR	8.0	86

Result: Pass

CGPA: 5.00

Grade: A

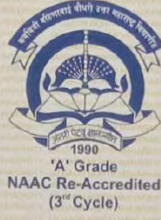

Co-ordinator

Abbreviations:

AM: Assessment Methods, **P:** Pass, **F:** Fail, **AB:** Absent, **RR:** Result Reserved, **TH:** Theory,
PR: Practical, **O:** Outstanding Grade

॥ अंतरी पेटवू ज्ञानज्योत ॥

Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon



Jalgaon (M.S.), INDIA

We, the Board of Deans, Kavayitri Bahinabai Chaudhari
North Maharashtra University, Jalgaon

&

The Principal

R.C. Patel Arts, commerce and science college, shirpur
do, hereby, certify that,

Mr./Ms. Bhavsar Havinakshi Sanjay

has pursued a course of study approved by the Kavayitri Bahinabai
Chaudhari North Maharashtra University, Jalgaon
and has passed the requisite examination held in **oct 2021**
with **A** grade and found duly qualified for the award of

Diploma in
Bioinformatics

Dec

Which is conferred on ~~him~~/ her on **October 1st, 2021**

In testimony whereof is set the seal and signatures of authorities.

Deelatil
Principal



[Signature]
Dean

B N^o 000378

K.B.C. North Maharashtra University, Jalgaon
Ordinance 181

College
R. C. Patel Arts, Commerce and Science College,
Shirpur

Name of career oriented course
Diploma in Plant Tissue Culture

Faculty
SCIENCE

Academic year
(2020-21)

K.B.C. North Maharashtra University, Jalgaon

Ordinance 181

College name : **R. C. Patel Arts, Commerce and Science College, Shirpur**

Title of the course : **Diploma in Plant Tissue Culture**

Aims/Objective of the course : **To make students acquaint about methods in plant tissue culture and their applications.**

Duration of the course : **1 Year**

Fees structure : **Rs. 1000/-**

Course structure : **Paper I: Plant Biotechnology**
Paper II: Plant Tissue Culture
Paper III: Lab Course

Eligibility for admission : **Certificate Course in Plant Tissue Culture**

Skeleton of course:

Sr No	Paper	Name of subject	Theory / Practical	Teaching hours	Maximum marks allotted			Passing			Credit
					External	Internal	Total	External	Internal	Total	
7.	DPTC-101	Plant Biotechnology	Theory	90	60	40	100	24	16	40	6
8.	DPTC-102	Plant Tissue Culture	Theory	90	60	40	100	24	16	40	6
9.	DPTC-103	Lab course	Practical	120	60	40	100	24	16	40	8

Minimum staff : 03

Mode of examination : Internal and external
 (Theory and Practical)

Detail syllabus : Syllabus copy attached

DPTC 101: Plant Biology

Topics	Lectures allotted
1. Plant tissue culture and some related aspects	
1.1 Bio village concept: Qualifications required to join the training course, Employment for rural youth	15
1.3 Efforts of public research institutes	
1.4 Production criteria and economics: Selection of crops for micro propagation, Selection of location	
1.5 Planning for production: Multirate, Passage, Operator efficiency	
2. Germplasm Conservation and Storage	
2.1 Introduction	15
2.2 Approaches for germplasm conservation: <i>In-situ</i> Conservation and <i>Ex-situ</i> Conservation	
2.3 Germplasm conservation in the form of seeds	
2.4 In-vitro methods for germplasm conservation	
2.5 Applications of germplasm storage	
2.6 Limitations of germplasm storage	
3. Plant tissue culture and Cryopreservation	
3.1 Introduction	15
3.2 Technique used in cryopreservation	
3.3 Development of sterile tissue cultures	
3.4 Addition of cry protectants and pre-treatment	
3.5 Freezing, Storage, Thawing	
3.6 Reculture, Measurement of viability and Plant regeneration	
4. Eco-Social Impact of Genetically Modified Crops	
4.1 Legal rights in the new biotechnology: Patent	15
4.2 Impacts on Farmers and Consumers, Ethical and Practical Problems	
4.3 Transgenic plants: Risk, Benefits and Impact on Society and Environment	

4.4 Transgenics and Human wealth

5. Agro biotechnology and its Applications

5.1 Improvement of crop yield and quality: Green revolution **15**

5.2 Genetic manipulations of fruit ripening,

5.3 Prevention of discolouration, flower pigmentation

5.4 Male sterility

5.5 Genetic Engineering for increasing vitamins, amino acids & minerals

5.6 Commercial transgenic crop plants

6. Plant tissue culture and forestry

6.1 Introduction and History **15**

6.2 Scope of tissue culture in forestry.

6.3 Applications of PTC in forestry.

References:

1. Introduction to biotechnology: S. S. Purohit.
2. Biotechnology: U. Satyanarayana
3. Kalyan Kumar De, Plant tissue culture.

DPTC 102: Advances in Plant Tissue Culture

Topics	Lectures allotted
1. Preparation of Media	
1.1 Media components	
1.2 Preparation of Stock solutions	
1.3 Preparation of Media	15
1.4 Media mixing	
2. Aseptic Techniques and preparation of Explants	
2.1 Sterilization of Plant Tissues	15
2.2 Control of Bacterial and Fungal Contaminants by antibiotics	
2.3 Pretreatment to explant	
2.4 Age of explant	
2.5 Size of explant	
3. Methods of sterilization and Disinfection	
a. Effectiveness of antimicrobial agent activity: Population size, population composition, Concentration of antimicrobial agent, exposure time, Temperature	15
b. Sterilization: Moist Heat, Dry Heat, Filtration, Radiation	
c. Disinfection: Chemical disinfectants, Classification of Chemical Disinfectants	
4. Organogenesis:	
4.1 Introduction	15
4.2 What is embryo culture?	
4.3 Different categories of embryo culture and their objectives.	
4.4 Principle and protocol.	
4.5 Applications.	
5. Cell – Suspension culture:	
5.1 Definition	15
5.2 Principle	
5.3 Protocol	
5.4 Importance of cell suspension culture.	
6. Embryo culture Organogenesis:	
6.1 Introduction	15
6.2 Principle and Protocol.	
6.3 Factors affecting organogenesis.	
6.4 Applications of organogenesis	

References:

1. Kalyan Kumar De, Plant tissue culture.
2. Plant tissue culture, S.S.Bhojwani and M.K. Rajdhan.

3. Plant tissue culture, S.S. Purohit.

DPTC 103: Lab Course

Sr. No.	Lab course	Lectures allotted
1.	Sterile methods in plant tissue culture.	12
2.	Isolation of <i>Agrobacterium</i>	12
3.	Isolation of chloroplast from spinach leaves.	12
4.	Isolation of plant DNA	12
5.	Estimation of Plant DNA	12
6.	Estimation of carotenoids.	12
7.	Cell suspension culture	12
8.	Study of Leaf Culture	12
9.	Study of Ovary Culture	12
10.	Study of embryo culture.	12
Total		120

References:

- 1) Kalyan Kumar De, Plant tissue culture.
- 2) Biotechnology books and experiment handbooks. Harisha

Lectures Attendance A.Y-20-21

Diploma in Plant Tissue Culture

Sr.No	Students Name	
1	PINGALE SEJAL ASHOK	16/07/20 18/07/20 21/07/20 22/07/20 26/07/20 28/08/20 03/08/20 05/09/20 09/09/20 10/09/20 15/02/20 17/02/20 21/02/20 22/09/20 23/02/20 26/01/20 28/01/20 30/09/20
2	RATHOD VINOD VISHWANATH	
3	SALUNKHE HITESH HIMMAT	



Department of Biotechnology
R.C. Patel Arts & Sci. College
Shirpur, Dist-Dhule.

Head,

K.B.C. North Maharashtra University, Jalgaon
Ordinance 181

College
R. C. Patel Arts, Commerce and Science College,
Shirpur

Name of career oriented course
Advance Diploma in Bioinformatics

Faculty
SCIENCE

Academic year
(2020-21)

K.B.C. North Maharashtra University, Jalgaon

Ordinance 181

College name : **R. C. Patel Arts, Commerce and Science College, Shirpur**

Title of the course : **Advance Diploma in Bioinformatics**

Aims/Objective of the course : **To make students acquainted about methods in Bioinformatics and their applications in life sciences**

Duration of the course : **1 Year**

Fees structure : **Rs. 1000/-**

Course structure : **Paper I: Genetic Engineering & Molecular Biology**
Paper II: Advances of Bioinformatics
Paper III: Lab Course

Eligibility for admission : **Diploma in Bioinformatics**

Skeleton of course:

Sr No	Paper	Name of subject	Theory / Practical	Teaching hours	Maximum marks allotted			Passing			Credit
					External	Internal	Total	External	Internal	Total	
10.	ADBI-101	Molecular Genetics & Bio-Engineering	Theory	90	60	40	100	24	16	40	6
11.	ADBI-102	Advances in Structural Bioinformatics	Theory	90	60	40	100	24	16	40	6
12.	ADBI-101	Lab course	Practical	120	60	40	100	24	16	40	8

Minimum staff : 03

Mode of examination : Internal and external

(Theory and Practical)

Detail syllabus : Syllabus copy attached

ADBI 101: Molecular Genetics and Bio-Engineering

Topics	Lectures allotted (in hrs)
Unit I: Nucleic acid Chemistry	
1.1 Structural aspects – Components of DNA and RNA,	
1.2 Nucleosides & Nucleotides (introduction, structure & bonding),	
1.3 Double helical structure of DNA (Watson-Crick model), various forms of DNA	15
1.4 Structure of RNA (Primary, Secondary & Tertiary)	
1.5 Central dogma of molecular biology	
Unit II: Molecular apparatuses	
2.1 DNA polymerase	
2.2 RNA polymerase and its types	20
2.3 DNA topology	
2.4 Topoisomerase (Types and Mechanism)	
2.5 Vectors	
Unit III: Basics in genetic engineering	
3.1 Basic principles of genetic engineering	
3.2 Open reading frames	15
3.3 Restriction enzymes and its types	
Unit IV: Advances in genetic engineering	
4.1 DNA Sequencing Methods (Dideoxynucleotide sequencing	
4.2 Chemical degradation method)	
4.3 Protein sequencing	
4.4 DNA microarrays	15
4.5 Human genome project	
4.6 PCR (Principle and basic protocol variations and applications)	
4.7 Genomic and cDNA libraries construction and their applications	

Unit V: Analysis of sequence data

5.1 Identification of gene functions and their products	15
5.2 Expression signals, SNP and EST	
5.3 Protein motifs and domains	

Unit VI: Analysis of gene expression:

6.1 Analyzing transcriptions (Northern blots, RT-PCR),	10
6.2 Translational analysis (western blots, 2D-electrophoresis)	

Total	90
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ADBI 102: Advances in Structural Bioinformatics

Topic	Lectures allotted (in hrs)
Unit 1: Genomics 1.1 Genomics, Concept, approaches and methods 1.2 Genome mapping, determining sequence of a clone 1.3 Human genome project 1.4 Automated DNA sequencing.	12
Unit 2: Proteomics 2.1 Technology for protein expression analysis 2.2 Posttranslational modification 2.3 Protein sorting 2.4 Protein-protein interactions	08
Unit 3: Sequence alignment and algorithms a. Study of similarities b. Sequence alignment methods c. Pairwise sequence alignment d. Needleman-Wunsch algorithm and Smith-Waterman algorithm e. Multiple sequence alignment and programs for sequence alignment	14
Unit 4: Protein motifs and domain prediction 4.1 Identification of motifs and domains in multiple sequence alignment 4.2 motif and domain databases using regular expressions 4.3 Protein family databases.	12
Unit 5: Phylogenetic analysis 5.1 Terminologies 5.2 Molecular evolution and Molecular phylogenetics 5.4 Gene phylogeny and species phylogeny 5.6 Forms of phylogenetic tree.	12
Unit 6: Phylogenetic tree construction 6.1 Distance based methods and character based methods 6.3 Phylogenetic tree evaluation 6.4 Phylogenetic programs – PHYLIP and DAMBE	12
Unit 7: Online Map repositories 7.1 NCBI – Entrez Human genome map viewer 7.2 OMIM – Online Mendelian Inheritance in Man	10
Unit 8: Drug discovery and pharm informatics 8.1 Discovering a drug 8.2 Target identification and validation 8.3 Identifying the lead compound	10

ADBI 103: Lab course

Lab work	Periods allotted (in hrs)
Study SPDBV and Rasmol	8
Study of Molecular phylogeny (PHYLIP)	6
Study of ENTREZ search engine	6
Prediction of ORF using ORFfinder	5
Determination of protein properties using NCBI	6
Study of human genome map viewer of NCBI	4
Analysis of protein and nucleic acids sequences	6
Accessing PubMed and PubMed Central	4
Study of Online Mendelian Inheritance in Man	10
Comparing and analyzing sequences using DAMBE.	8
Homology comparing using HomoloGene	10
Design PCR primers using online tools	4
Protein multiple sequence analysis using NCBI-COBALT	8
Studying phylogeny analysis	10
Determine sequence relationship using Needleman-Wunsch algorithm	7

Sequence similarity searching (NCBI BLAST)	12
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Total	94
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References:

1. Cell biology, genetics, molecular biology, evolution and ecology by P. S. Verma and V. K. Agrawal, S. Chand Publ.
2. Friefielder D, (1993) Microbial Genetics, Jones & Bartlett Publishers, Inc.
3. Arora M. P. Sandhu G.S. "Genetics"
4. Arora M. P. "Biotechnology"
5. Claverie J. M. & Notredame C. "Bioinformatics: A beginner's guide"
6. Bioinformatics - Concepts, Skills, Applications". S.C. Rastogi, Namita Mendiratta, Parag Rastogi.
7. Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins. Andrea's D. Baxevanis, B.F. Francis Ouellette.
8. Biological Sequence Analysis: Probabilistic Models of Proteins and Nucleic Acids. Richard Durbin et al.
9. Computer Methods for Macromolecular Sequence Analysis. Doolittle R.F. (Ed.) (Methods in Enzymology, VOI. 266).
10. Shanmughavel, P. 2005. Principles of Bioinformatics, Pointer Publishers, Jaipur, India.
11. DNA and Protein Sequence Analysis. A Practical approach. Bishop M.J. Rawlings C.J. (Eds.).
12. Introduction to Bioinformatics. Teresa. K. Atwood and David J. Parry-Smith.
13. An introduction to Bioinformatics by vikramsingh, Narosa Publ.
14. Bioinformatics - Computational Molecular Biology by Zvia Agur.
15. Basic Bioinformatics by Ignacimuthu.

Lectures Attendance A.Y-20-21

Advanced Diploma Course in Bioinformatics

Sr.No	Students Name		
1	PATIL SAMADHAN LILACHAND	07/7/20	
		11/7/20	
		21/7/20	
		26/7/20	
		03/8/20	
		08/8/20	
		17/8/20	
		28/8/20	
		09/12/20	
		12/12/20	
		21/12/20	
		03/1/21	
		06/1/21	
		20/1/21	
		08/2/21	
		13/2/21	
		23/2/21	
		26/2/21	
2	PATIL UNNATI CHANDRAKANT		
3	PATIL UTKARSHA SUNIL		



Department of Microbiology
R.C. Patel Arts & Sci. College
Shirpur, Dist-Dhule.

Head,

(Signature)



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Advanced Diploma in Bioinformatics (CGPA Pattern)

Examination held in May 2021

Student Name : Sonawane Sneha Dilip

College Name : R. C. Patel Arts Commerce and Science College, Shirpur

Seat Number : 201305

Exam Centre : Shirpur (240051)

Paper Code	Paper Name	AM	Credits (Max.)	Marks Obtained
ADBI 101	Molecular Genetics and Bio-Engineering	TH	6.0	92
ADBI 102	Advances in Structural Bioinformatics	TH	6.0	90
ADBI 103	Lab Course	PR	8.0	95

Result: Pass

CGPA: 6.30

Grade: O



[Signature]
Co-ordinator

Abbreviations:

AM: Assessment Methods, **P:** Pass, **F:** Fail, **AB:** Absent, **RR:** Result Reserved, **TH:** Theory, **PR:** Practical, **O:** Outstanding Grade

**K.B.C. North Maharashtra University,
Jalgaon**

Ordinance 181

**R. C. Patel Arts, Commerce and Science College,
Shirpur**

Name of Career Oriented Course

PG Diploma in Bioinformatics

Faculty

SCIENCE

Academic year

(2020-21)

K.B.C. North Maharashtra University, Jalgaon

Ordinance 181

College name	:	R. C. Patel Arts, Science and Commerce College, Shirpur
Title of the course	:	Post graduate diploma in Bioinformatics
Aims/Objective of the course	:	To make students acquaint about current trends in the field of bioinformatics and its application in lifesciences.
Duration of the course	:	1 Year
Fees structure	:	Rs. 1500/-
Course structure	:	Paper I: Foundations in Life Sciences Paper II: Advances in Bioinformatics Paper III: Lab Course
Eligibility for admission	:	B.Sc. (Science) as per ordinance 181

Skeleton of course:

Sr. No.	Paper	Name of subject	Theory /Practical	Teaching hours	Maximum marks allotted			Passing			Credit
					External	Internal	Total	External	Internal	Total	
1.	Paper I	Foundations in Life Sciences	Theory	90	60	40	100	24	16	40	6
2.	Paper II	Advances in Bioinformatics	Theory	90	60	40	100	24	16	40	6
3.	Paper III	Lab course	Practical	120	60	40	100	24	16	40	8

PGDBI 101: Foundations in Life Sciences

Topic s	Lectures allotted (in hrs.)
<p>Chemistry of Life</p> <ul style="list-style-type: none"> • Chemistry of living organisms, atoms, elements, chemical bonds, comparison of enzymatic and non-enzymatic reactions. • Study of biomolecules: <ul style="list-style-type: none"> • Carbohydrates: Structure, classification • Proteins: properties of amino acids and peptides; structural level of proteins; phi- and psi- angles in protein conformation. • Enzymes: EC number, enzyme nomenclature and classification; units of enzyme activity; allosteric enzymes. 	15
<p>Genetics</p> <ul style="list-style-type: none"> • Basics concepts of genetics: Bases, nucleotides, nucleosome, histones, genes, genomes. • RNA: Structure, function and types, mRNA splicing • DNA: structure of B form of DNA; denaturation, renaturation kinetics, hybridization of DNA, circular and linear DNA. • Genome mapping and genome sequencing: Basics and significance 	15
<p>Immuno-informatics</p> <ul style="list-style-type: none"> • Immune system: Overview, Types: (innate and acquired) • Antibody: Structure and function • MHC: MHC Peptide interaction, MHC I & II, Polymorphism • B Cell and T Cell antigens: Characteristics and Importance • Immune response: CMI and humoral immune response • Bioinformatics in immunology: Background and significance in vaccine development 	15

Topics	Lectures allotted (in hrs.)
<p>Central Dogma of Molecular biology</p> <ul style="list-style-type: none"> • Nucleic Acid: Types and Structure • 16S RNA • DNA topology • DNA modifying enzymes • RNA polymerase and its types • Transcription: Mechanism • Translation: Mechanism 	15
<p>Genomics & Proteomics</p> <ul style="list-style-type: none"> • Study of organization of genomes, Genome sequencing techniques • The Human Genome Project, Applications of genomics studies • Introduction to proteomics, Metabolic pathways • Post-translational Modification • Protein–Protein Interactions • Applications of proteomics studies 	15
<p>Molecular Biology techniques</p> <ul style="list-style-type: none"> • Centrifugation and ultra-centrifugation • Gel electrophoresis • SEM and TEM • TLC, HPTLC • HPLC • pH and pOH 	15
Total	90

PGDBI 102: Advances in Bioinformatics

Topics	Lectures allotted (in hrs.)
<p>Bioinformatics Software</p> <ul style="list-style-type: none"> • Study of Nucleic acid tools: Crustal W, ORF Finder, tools at NCBI,CFSSP • Study of Protein tools: ExPaSy, tools at EBI, ProtParam, Crustal -Omega 	08
<p>Biological databases</p> <p>Concept and classification of biological databases</p> <ul style="list-style-type: none"> • Nucleic acid sequence databases: GenBank, EMBL, DDBJ • Protein sequence databases: SwissProt, PIR, PDB • EXPASY, SRS, ENTREZ 	12
<p>Sequence alignments</p> <ul style="list-style-type: none"> • Concept of single and multiple sequence alignment • Sequence alignment methods <ul style="list-style-type: none"> • Global and Local Alignment • Multiple Sequence Alignment • Sequence alignment algorithms <ul style="list-style-type: none"> • Smith-Waterman algorithm • Needleman-Wunsch Algorithm • Web-based sequence alignment tools 	15
<p>Homology, phylogeny and evolutionary relationships</p> <ul style="list-style-type: none"> • Concept of homology, similarity and identity • Phylogeny and evolutionary relationships • Methods of phylogenetic analysis • Phylogenetic trees • Tree-building methods • Use of Phylip and DAMBE in phylogenetic analysis 	10

Topics	Lectures allotted (in hrs)
Pharma informatics <ul style="list-style-type: none"> • Drug discovery process • Target identification and validation • Identifying and optimization of lead compound 	12
Analytical methods of nucleic acid and proteins <ul style="list-style-type: none"> • Gene prediction strategies • ORF finding methods • Protein function prediction strategies • Secondary structure prediction • 3D structure prediction of proteins 	6
Genome maps <ul style="list-style-type: none"> • Types of Genome maps and their uses, • Map elements, • Types of maps: Cytogenetic, Linkage map, Transcript map, Physical map, Comparative map, integrated map. 	12
Map repositories <ul style="list-style-type: none"> • NCBI – Entrez Human genome map viewer • NCBI – Taxonomy browser • Human genome resources at ornl.gov • OMIM – Online Mendelian Inheritance in Man 	8
Applications in Genomics and proteomics <ul style="list-style-type: none"> • Genome mapping and Genome annotation • Protein expression analysis - SAGE • 2D gel electrophoresis 	7
Total	90

PGDBI 103: Lab course

Sr. No.	Lab work	Periods allotted (In hrs.)
1.	Study of online resources using Sequence Retrieval System: ENTREZ	6
2.	Study of online protein resources: PDB and PIR.	4
3.	Multiple sequence alignment using Clustal Omega.	8
4.	Protein sequence download and visualization using RsMol and SPDBV	4
5.	Prediction of possible ORF using NCBI ORF finder.	4
6.	Calculate physical, chemical parameters for proteins using ProtParam.	8
7.	Study of Global and local sequence alignments	4
8.	Study of Blast Tool At Ncbi i. Use Blast in to identify the gene, the source organism and analysisof BLAST result. ii. Identification of protein sequence by BLAST p. iii. Finding PCR primers specific for template DNA using NCBI's Primer BLAST.	8 8 6
9.	Study of services at EBI i. Ensemble ii. EBI metagenomics iii. Gene Wise	6 6 8
10.	Study of UniProt tool of EBI	8
11.	Studying resources for molecular phylogeny. i. Study of MEGA5 software. ii. Study of sequence editor software: BioEdit. iii. Visualizing phylogenetic tree using FigTree / TreeView.	6 4 4
12.	Studying molecular phylogeny using tool DAMBE.	8
13.	Explore study and use proteomics resources available at ExPaSy.	6
14.	Predicting possible genes in DNA sequence using NCBI-GLIMMER.	4
Total		120

References:

1. Arora M. P. Sandhu G.S. “Genetics”
2. Claverie J. M. & Notredame C. “Bioinformatics: A beginner’s guide”
3. Bioinformatics – Concepts, Skills, Applications”. S.C.
Rastogi, Namita Mendiratta, Parag Rastogi.
4. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology
by P. S. Verma and
V. K. Agrawal, S. Chand Publ.
5. Bioinformatics: A Practical Guide to the Analysis of Genes and
Proteins.
Andréa’s D. Baxevanis, B.F. Francis Ouellette.
6. Biological Sequence Analysis: Probabilistic Models
of Proteins and Nucleic Acids. Richard Durbin et al.
7. Computer Methods for Macromolecular Sequence
Analysis. Doolittle R.F. (Ed.) (Methods in Enzymology,
VOL. 266).
8. Shanmughavel, P. 2005. Principles of Bioinformatics,
Pointer Publishers, Jaipur, India.
9. DNA and Protein Sequence Analysis. A Practical
approach. Bishop M.J. Rawlings C.J. (Eds.).
10. Introduction to Bioinformatics. Teresa. K. Atwood and David J.
Parry-Smith.
11. An introduction to bioinformatics by Vikram Singh, Narosa Publ.
12. Bioinformatics - Computational Molecular Biology by Zvia Agur.
13. Basic bioinformatics by Ignacimuthu.



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Post Graduate Diploma in Bioinformatics (CGPA Pattern)

Examination held in May 2021

Student Name : Kulkarni Harshada Sunil

College Name : R. C. Patel Arts Commerce and Science College, Shirpur

Seat Number : 213103

Exam Centre : Shirpur (240051)

Paper Code	Paper Name	AM	Credits (Max.)	Marks Obtained
PGDBI 101	Foundation in Life Sciences	TH	6.0	84
PGDBI 102	Advances in Bioinformatics	TH	6.0	87
PGDBI 103	Lab Course	PR	8.0	90

Result: Pass

CGPA: 5.65

Grade: A



Co-ordinator

Abbreviations:

AM: Assessment Methods, **P:** Pass, **F:** Fail, **AB:** Absent, **RR:** Result Reserved, **TH:** Theory, **PR:** Practical, **O:** Outstanding Grade

K.B.C. North Maharashtra University, Jalgaon
Ordinance 181

College
R. C. Patel Arts, Commerce and Science College, Shirpur

Name of career oriented course
Post Graduate Diploma in Microbial Biotechnology

Faculty
SCIENCE

Academic year
(2021-21)

K.B.C. North Maharashtra University, Jalgaon
Ordinance 181

College name	:	R. C. Patel Arts, Science and Commerce College, Shirpur
Title of the course	:	Post graduate diploma in Microbial Biotechnology
Aims/Objective of the course	:	To make students acquaint about methods and techniques of industrial biotechnology and their applications
Duration of the course	:	1 Year
Fees structure	:	Rs. 1500/-
Course structure	:	Paper I: Essentials in Life Sciences Paper II: Advances in Industrial technology Paper III: Lab course
Eligibility for admission	:	B.Sc. (Science) as per ordinance 181

Skeleton of course:

Sr No	Paper	Name of subject	Theory / Practical	Teaching hours	Maximum marks allotted			Passing			Credit
					External	Internal	Total	External	Internal	Total	
13.	Paper I	Essentials in Life Sciences	Theory	90	60	40	100	24	16	40	6
14.	Paper II	Advances in Industrial Technology	Theory	90	60	40	100	24	16	40	6
15.	Paper III	Lab course	Practical	120	60	40	100	24	16	40	8

Minimum staff : 03

Mode of examination : Internal and external
(Theory and Practical)

Detail syllabus : Syllabus copy attached

PGDMBT 101: Essentials in Life Sciences

Topics	Periods allotted
Unit 1: Foundation in Microbiology:	
Microbial cells: Structure and organization, Microbial diversity with representative examples. Microbiology in the environment: water, sewage and air, environmental pollution and biodegradation.	15
Unit 2: Microbial physiology and biochemistry:	
Microbial nutrition, Aerobic and anaerobic growth, Factors affecting on growth, growth kinetics, Biomolecules (Carbohydrates, Nucleic acids, Lipids), Glycolysis, Gluconeogenesis.	10
Unit 3: Medical microbiology and immunology:	
Introduction to Medical Microbiology, Microbiology in human diseases, Introduction to immune system, Immunity, basic immunological techniques, immunodiagnostic methods with examples of applications, monoclonal antibodies.	15
Unit 4: Fundamental of Molecular Biology:	
Structure and properties of DNA/RNA, replication, DNA mutations and repair, transcription, mRNA processing, translation, gene regulation: lac operon.	15
Unit 5: Techniques in Molecular Biology:	
Hybridization techniques, DNA Microarray, Nucleic acid blotting techniques (Southern, Northern, Western), Electrophoresis: gel and SDS-PAGE	15
Unit 6: Techniques in genetic Engineering:	
Concept & Methods in microbial genetics: mutagenesis and screening, strain improvement, transgenic plants and animals. Principles of cloning, Introduction to cloning vectors, Construction of genomic and cDNA libraries, PCR and DNA-based diagnostic techniques, DNA sequencing, Site directed mutagenesis, Protein structure - function relationship.	20
Total	90

PGDMBT 102: Advances in Industrial Technology

Topics	Periods Allotted
Unit 1: Bioprocess technology:	
Fundamentals in Bioprocessing, Raw materials for bioprocessing, comparison of chemical and biochemical processing based on energetics and environmental issues. Development of inocula, kinetics of enzymatic and microbial processes, Optimization studies, sterilization of media, air and equipment, modes of cell cultivation, general principles of bioreactor design and their operation.	15
Unit 2: Downstream processing:	
Introduction to Downstream processing. Separation and purification techniques, quality assurance testing, representative examples of microbial products, vaccines and vaccine development, immobilization of cells and enzymes: principles, methodology and applications, disintegration of cells, separation of solid and liquid phases, isolation and purification techniques for proteins and other products. eg., precipitation, adsorption, chromatographic separations, bio-affinity based methods.	30
Unit 3: Biosafety and environmental monitoring:	
Biosafety: Introduction, Concept, Significance & Technology Environmental monitoring: Introduction, Concept, Significance & Technology Intellectual Property Rights in Biotechnology.	10
Unit 4: Quality Control:	
Antimicrobial effectiveness Testing, Pyrogen Test, Sterility Test, Ames test, Microbial Assay (Antibiotic and Vitamins), Phenol Coefficient: (RW Test and Chick Martin Test), Minimum Inhibitory Concentration (MIC) (Tube Dilution and Gradient Plate Method), Kirby-Bauer Antibiotic Sensitivity Test and Synergistic effect of antibiotics, Microbial Limit Test (analysis of water, raw material, finished product, packaging material and Excipients) Environmental monitoring and area monitoring	25
Unit 5: Quality Assurance:	
Calibration and Validation, Pharmaceutical audits, GMP and CGMP, FDA, WHO and other agencies Principles of QA, Reporting and documentation, Market surveillance and monitoring.	10
Total periods	90

PGDMBT 103: Lab course

Lab course	Periods Allotted
1. Microbial Limit Test (analysis of water, raw material, finished product, packaging material, Excipients)	8
2. Sterility Test of Pharmaceutical Products	8
3. Growth Promotion test of Media	8
4. Antibiotic Assay (Turbidometric)	8
5. Vitamin Bioassay (Diffusion method)	8
6. Kirby-Bauer Antibiotic Sensitivity Test	6
7. Phenol Coefficient tests	4
8. Environmental monitoring, area monitoring	12
9. Minimum Inhibitory Concentration (Tube dilution Method)	10
10. Calibration and Validation	6
11. Pharmaceutical audits, GMP and CGMP, FDA, WHO and other agencies	8
12. Principles of QA	4
13. Reporting and documentation	4
14. Market surveillance and monitoring.	6
15. Project/Industrial training/Field work	20
Total	120

References:

1. Indian Pharmacopieia, 2010.
2. British Pharmacopieia, 2009.
3. United state Pharmacopieia, 2007.
4. Industrial Microbiology: Whitaker and Hall.
5. Microbial Biotechnology: Moorey Mu Young.
6. Biotechnology: Expanding Horizons: B.D. Singh.
7. Quality assurance in Microbiiology: Ramkaran. M.
8. Biochemistry: Lubert Stryer.
9. Recombinant DNA: J.D. Watson.
10. Gene Biotechnology, S. N. Jogdand
11. Biochemistry, Lodish, IVth Edn.
12. Process Biotechnology fundamentals, IInd Edn, Mukhopadhyay S N (2004)
13. Intellectual property rights on biotechnology, Singh K C. BCIL, New Delhi
14. Biotechnology and genomics, Gupta P K, Rastogi publications, India.

R.C.Patel Arts, Commerce & Science College, Shirpur
Department of History
Certificate Course on Cultural Heritage of India
2020-2021

Aim

- ✓ Cultural Heritage is a concept which offers a bridge between the past and the future with the application of particular approaches in the present. Due to its attached values for these groups or societies, cultural heritage is maintained in the present and bestowed for the benefit of future generations.

Course Objective

- ✓ To introduce the Cultural heritage of India
- ✓ Aware the importance and legacy of caves, forts, Fairs and festivals.
- ✓ To develop the interest and skill of tourism among the Student.

Course Outcomes

- ✓ Understand the Concept of Cultural Heritage of India.
- ✓ Study the various Cultural factors which influence the rich flow of Indian Culture.
- ✓ Appreciate & Adequate the rich Cultural heritage of India.

Duration of the course

- ✓ One week

Timing of the course

- ✓ Two Houses a day.

Eligibility Criteria

- ✓ For BA/B.Sc./B.Com Student.

Criteria for completion

- ✓ The student must have attended at least 80% of the lectures and completed all assignment

Syllabus

Cultural Heritage of India

Total period: - 15

Credits:-02

1 Culture Heritage: An Introduction

- a Definition and meaning of culture and heritage
- b Geographical features of India
- c Social Consequences of Saint of India
- d Characteristics of Indian Culture -
Continuity and Change, Variety and Unity, Secular Outlook. Universalism,
Materialistic and Spiritualistic

2 Cultural Heritage of India

- a Caves and forts in India –
Karle Caves, Bhaje Caves, Pandava Caves, Pitalkhore Caves, Kanheri Caves
Raigad, Pratapgad, Sinhagad, Shivneri, Daulatabad, Janjira
- b India – Festivals and Pilgrimages
Gudi Padwa, Pola, Dussehra, Diwali, Holi, Rath Festival, Navratri Festival,
Bhaldev, Gulabai Festival, Kanbai Festival, Shiv Jayanti Festival, Ganesh Festival,
Jyotirlinga, Ashtavinayak, Shaktipeetha, Pandharpur
- c World Heritage Sites in India
Ellora Caves, Elephanta Caves, Ajanta Caves, Victorian and Art Deco Ensemble of
Mumbai, Chhatrapati Shivaji Maharaj Terminus
- d Tour Report

Reference Book

- Pathak, A.S. (Edi 2009) Maharashtra: Land and its People, Gazetteers Department, Government of Maharashtra, Mumbai
- Karve Iravati (1951) Marathi Lukach Sanskrit, Deshmukh & Company, Pune
- The Cultural Heritage of India, Ramkrishana Mission Institute of Culture (9 Vol)

Admission Form

R.C.Patel Educational Trust's

R.C.Patel Arts Commerce and Science College Shirpur, Dist-Dhule, M.S. 425405



To,
The Principal
R.C.Patel Arts, Commerce and Science College, Shirpur

Sir,

I wish to get admitted to as Students for the -

Certificate Course on Cultural Heritage of India

PARTICULAR OF CANDIDATE

- 1 Name in Full (Surname First) : Baviskar Rekha Abhay
- 2 Father/Husband Name : Baviskar Abhay Sanjay
- 3 Mother Name : Baviskar Rohini Abhay
- 4 Address for Correspondence : Betawad Tal. Shindkheda
- 5 Mob. No. : 9373863199
- 6 Email Id : rabaviskar@gmail.com
- 7 Date of Birth : 12/02/2001
- 8 Place of Birth : Betawad
- 9 Category : OBC
- 10 Family Annual Income : 100000/-
- 11 Last qualified examination : FYBA
- 12 Marks obtained (out of total marks) : 1024/1200

I hereby declare that all statements made in this application to the best of my knowledge and beliefs are true, complete and correct. I understand that in the event of any information being found false or incorrect, my admission is liable to be cancelled.

Date 21/12/2020


Signature - XXX

Year of Course 2020-2021

Course Name: - Certificate Course on Cultural Heritage of Maharashtra

Student Attendance

Sr. No	Student Name	Signature of Beneficial Student						
		7/1/2021	8/1/2021	9/1/2021	10/1/2021	11/1/2021	12/1/2021	14/1/2021
1	Patil Sunil Daga	P	P	A	P	P	P	P
2	Suryawanshi Ram Manoj	P	P	P	P	P	A	P
3	Chaudhari Umesh Ramesh	P	A	P	P	P	P	P
4	Pawara Rahul Magan	P	P	P	A	P	P	P
5	Pawara Pallavi Ratan	P	P	P	P	P	P	A
6	Patil Rupali Bhanudas	P	A	P	P	P	P	P
7	Pawara Sandip Khatarya	P	P	P	P	A	P	P
8	Sonowane Pankaj Madhukar	A	P	P	P	P	P	P
9	Pawar Kalpesh Ramesh	P	P	P	P	P	P	P
10	Barela Kailas Darasing	P	P	P	P	P	P	P
11	Pawara Jagan Vaharya	P	P	A	A	P	P	P
12	Sonar Bhushan Mohan	P	P	P	P	P	A	P
13	Pawara Ravindra Jadya	P	P	P	P	P	P	P
14	Jadhav Mayur Rahul	A	P	P	P	P	P	P
15	Marathe Pravin Manga	P	P	A	P	P	P	P
16	Lohar Priti Bhagwan	P	P	P	P	A	P	P
17	Baviskar Rekha Abhay	P	P	P	P	P	P	P
18	Mali Prajakta Sham	P	P	P	P	P	P	P
19	Shimpi Akshara Raju	P	P	P	P	P	P	P
20	Pawara Pritibala Rantnya	P	P	P	P	P	P	P
21	Kulkarni Abhay Sohan	P	P	P	A	P	P	P
22	Vasave Sandip Kiran	P	A	P	P	P	P	P
23	Pawara Kantilal Ramesh	P	P	P	A	A	P	P
24	Sonawane Sachin Anil	P	A	P	P	P	P	P
25	Pawara Sunita Darasing	P	P	A	P	P	P	P


Dr. R.A. Chaudhari
(Co-ordinator)




Dr. D.R. Patil
(Principal)



R. C. Patel Educational Trust's

R. C. Patel Arts, Commerce & Science College, Shirpur

(Affiliated to the K.B.C. North Maharashtra University, Jalgaon)

STATEMENT OF MARKS

Certificate Course Name - Cultural Heritage in India

Examination held in - May 2021

Student Name : Baviskar Rekha Abhay

College Name : R. C. Patel Arts Commerce and Science College, Shirpur

Seat Number : 202017

Exam Centre : Shirpur (240051)

Paper Code	Paper Name	AM	Marks (Max.)	Total Marks
CCCHI 101	Cultural Heritage in India	TH	50	47
CCCHI 102	Field Work	FW	50	49

Result: **Pass**

Marks: **96**

Grade: **O**



Co-ordinator

Abbreviations:

AM: Assessment Methods, P: Pass, F: Fail, AB: Absent, RR: Result Reserved, TH: Theory, PR: Practical, O: Outstanding Grade

सा विद्या या विमुक्तये

R. C. Patel Arts, Commerce and Science College
Shirpur, 425405

Affiliated to KBC North Maharashtra
University, Jalgaon (M.S.), India



R. C. PATEL EDUCATIONAL TRUST

CERTIFICATE

The Principal of R. C. Patel Arts, Commerce and Science College, Shirpur (M.S.) do hereby certify that, Mr. /Ms. Baviskar Rekha Abhay has pursued a Certificate course and passed the requisite examination held in May - 2021 with 0 grade and found duly qualified. This certificate is awarded for successful completion of

Certificate Course
Cultural Heritage in India




Course Co-ordinator


Co-ordinator


Principal

Certificate No.: CC-01/202017/2021/A