डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

परिपत्रक क्रमांक /अभ्यासक्रम विभाग/बी.व्होक/४२/२०१९

या कार्यालयाचे परिपत्रक क्र./SU/Commerce & Management/B.Voc/३८/२०१८/ २२६१३-२२ दिनांक २४.०१.२०१९ अन्वये बी.व्होक. सॉईल ॲण्ड वॉटर कन्झरवेशन मॅनेजमेंट हा पदवी अभ्यासक्रम शैक्षणिक वर्ष २०१८-१९ पासून वाणिज्य व व्यवस्थापन विद्याशाखेमध्ये समाविष्ट करण्यात आल्याबाबत कळविण्यात आले होते.

या संदर्भात मा.कुलगुरु महोदय यांनी दिलेल्या आदेशानुसार आपणास पुनःश्च कळविण्यात येते की, बी.व्होक. सॉईल ॲण्ड वॉटर कन्झरवेशन मॅनेजमेंट हा पदवी अभ्यासक्रम वाणिज्य व व्यवस्थापन विद्याशाखेऐवजी विज्ञान व तंत्रज्ञान विद्याशाखेशी संबंधित असल्यामुळे या विद्याशाखेकडे वर्ग करण्यात आला आहे.

बी.व्होक. सॉईल ॲण्ड वॉटर कन्झरवेशन मॅनेजमेंट हा पदवी अभ्यासक्रम विज्ञान व तंत्रज्ञान विद्याशाखेमध्ये समाविष्ट करण्यात आल्याचे सर्व संबंधितांनी नोंद घेवून विद्यार्थी, शिक्षक आणि शिक्षकेतर कर्मचारी यांच्या निर्दशनास ही बाब आणून देण्यात यावी.

विद्यापीठ प्रांगण,
औरंगाबाद-४३१००४.
संदर्भक्र.अभ्यास.वि./२०१९/12686-90

दिनांक :- ०७-०३-२०१९.

उपकुलसचिव,
अभ्यासक्रम विभाग

****

या परिपत्रकाची एक प्रत माहिती तथा पुढील योग्य त्या कार्यवाहीस्तव अग्रेषितः-

१) सर्व प्राचार्य/प्राचार्या/संचालक, संलग्नीत बी.व्होक. महाविद्यालये, डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.
२) प्राचार्य,एस.बी.ई.एस.विज्ञान महाविद्यालय, औरंगाबाद.
३) संचालक, परीक्षा व मूल्यमापन मंडळ, राजर्षी शाहू महाराज परीक्षा भवन, डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.
४) समन्वयक, एम.के.सी.एल. राजर्षी शाहू महाराज परीक्षा भवन, डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.
५) कक्ष अधिकारी, बी.सी.एस. कक्ष, डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.
६) जनसंपर्क अधिकारी, डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद
७) अभिलेखपाल (Record Keeper), डॉ. बाबासाहेब आंबेडकर मराठवाडा विद्यापीठ, औरंगाबाद.

S.B.E.S. COLLEGE OF SCIENCE, AURANGABAD

Saraswati Nagar, Aurangpura, Aurangabad - 431 001 (M.S.)
Phone : 0240 2332192, 2344311
Website : www.sbscience.org
E-mail : sbsciencecollege@gmail.com,

Reaccredited by NAAC with 'A' Grade An ISO 9001 : 2008 Certified 'A' Grade by B.A.M.U.

Ref. No. SBSci/ 2018-19/1180-C

Date :

Date: 26.12.2018

To

Dy.Registrar,
Academic Section (Syllabus),
Dr.Babasaheb Ambedkar Marathwada University,
Aurangabad.

Sub: Regarding submission of revised B.Voc.syllabus.

Respected Sir,

Following B.Voc.Courses are introduced in the S.B.E.S.College of Science, Aurangabad.

1. I.T.Skills and Software Development.
2. Architectural Planning and Interior Design
3. Soil and Water Conservation and Management
4. Acting

We are enclosing herewith revised syllabus for above courses for all the three years (Bachelor Degree).

Submitted for kind information and approval.

Thanking you,

Yours faithfully,

(Dr.P.V.Jabde)
Principal

PRINCIPAL
S.B.E.S. College of Scienc.
Aurangabad

Encl: As above.

B.Voc. Soil and Water Conservation & Management

Dr.BabasahebAmbedkarMarathwada University

Aurangabad-431004

NAAC Re-accredited with Grade 'A'

SYLLABUS

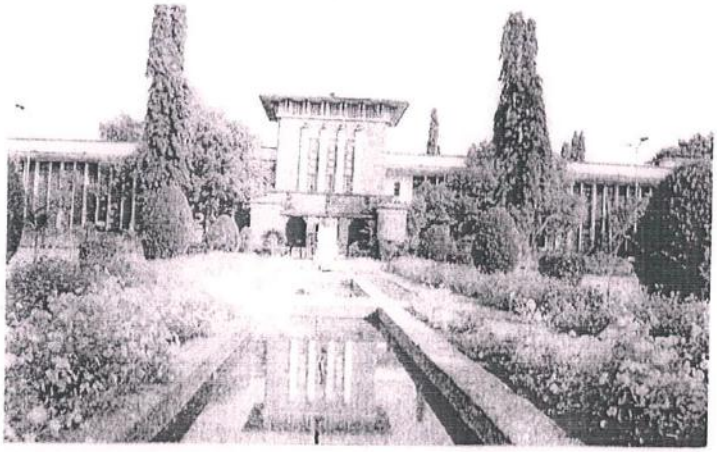
Bachelor of Vocation in

"Soil and Water Conservation & Management"

Medium = English / Marathi

(3 Years Program)

(With Effective From: 2018-19)



हे ज्ञानिची पवित्रता | ज्ञानीचि आथि ||

B.Voc. Soil and Water Conservation & Management

Introduction:

The University Grants Commission (UGC) has launched a scheme on skills development based higher education as part of college/university education, leading to Bachelor of Vocation (B.Voc.) Degree with multiple exits such as Diploma/Advanced Diploma under the NSQF.The B.Voc.programme is focused on universities and colleges providing undergraduate studies which would also incorporate specific job roles along with broad based general education. This would enable the graduates completing B.Voc.to make a meaningful participation in accelerating India's economy by gaining appropriate employment, becoming entrepreneurs and creating appropriate knowledge.

Although there has been remarkable progress in all sectors of education in last couple of decades, the less regulated area of the education sector-vocational training—seems to have lost its significance/importance. This has led to the widening gap between the supply and demand for skilled manpower across SWCM. This shortage of skills has translated directly into unemployment among an increasing number of graduates who pass-out every year and are forced to bare- trained in order to become marketable. This program is designed to produce a skilled manpower so that wide variety of options in different sectors of SWCM would be available and it will improve the opportunities for the unemployed youths in the country in both the private and public sectors.

Program Outcomes:

The course has essentially been designed for students wishing to enhance their employability. These courses facilitate students in learning, earning and growing professionally. The course offers to eligible candidates relevant work experience.

This course covers topics in soil and water management and conservation important to students of agricultural, viticulture, and environmental sciences. Processes that degrade the soil- and water-resources of Australia (e.g. erosion, salinity, alkalinity and sodicity, as well as acidification, water repellence, and degradation of soil structure) are examined, and their measurement, avoidance and management discussed. There is a strong focus on quantitative theory and practice of measuring and managing soil water using commercially available technology, particularly in relation to interception, storage and movement of water in dry land and irrigated agro-ecosystems. Broader issues in soil and water conservation (e.g. State and Commonwealth legislation) are also covered. Practical classes consist of laboratory, computer and field exercises designed to illustrate the concepts covered in lectures.

Though associate degree options are available, courses leading to a degree in soil conservation are usually offered as part of a bachelor's or advanced degree program. These programs might focus on

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

agronomy, food science, soil science and conservation, or crop management. Common concepts covered in these courses include:

Land use management, Soil erosion, Soil physics, Watershed management, Environmental impacts, Soil and agriculture.

Exit Options: Bachelor of Vocation (B. Voc.) is launched under the scheme of University Grants Commission for skill development based on higher education leading to Bachelor of Vocation (B. Voc.) Degree with multiple exits as Diploma/Advanced Diploma under the National Skill Qualification Framework (NSQF). The B. Voc. programme incorporates specific job roles and their National Occupational Standards along with broad based general education.

1. B. Voc. Programme has been designed as per National Skill Qualification Framework emphasizing on skill based education.
2. LEVELS OF AWARD: The certification levels shall lead to Diploma/Advanced Diploma/B. Voc. Degree in Soil and Water Conservation & Management.

Award	Duration	Corresponding NSQF level
Diploma in Soil and Water Conservation & Management	1 Year	5
Advanced Diploma in Soil and Water Conservation & Management	2 Year	6
B. Voc. Degree in Soil and Water Conservation & Management	3 Year	7

The suggested credits for each of the years are as follows:

NSQF level	Skill component credits	General education credits	Normal calendar duration	Exit point /awards
Year 1	36	24	Two Semesters	Diploma in Soil and Water Conservation & Management
Year 2	36	24	Four Semesters	Advanced Diploma in Soil and Water Conservation & Management
Year 3	36	24	Six Semesters	B. Voc. Degree in Soil and Water Conservation & Management
Total	**108**	**72**		

Eligibility criteria for Admission:

1. A candidate will be eligible to join 1st semester of B. Voc. Soil and Water Conservation & Management course, if he/she has passed 10+2 examination (Any Stream) or 10+2 vocational from any stream of recognized Board/university, or any other examination recognized as equivalent thereto.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

2. The course of study of B. Voc. shall be divided in to four semesters and university examination will be held at the end of every semester as fixed by the University.
3. Semester examination will be open to regular candidates who have been on the rolls of a college affiliated to this University and meet the attendance and other requirements.

Admission, Registration and Promotion Process:

Admission will be done on the basis of Percent mark obtained by candidate in Twelfth science or Common entrance test conducted by college or admission criteria as decided by the authority for first semester.

The students will have to clear / qualify at least 50% of theory papers / courses from second semester and all papers / courses (inclusive of theory and practical) from first semester for getting promoted to second year. Similarly the students will have to clear / qualify at least 50% of theory papers / courses from fourth semester and all papers / courses (inclusive of theory and practical) from third semester for getting promoted to third year.

Dropout students will be allowed to register for second or third year as and when the concerned courses are offered by the College, however he/she should not exceed more than twice the duration of the course from the date of first registration at the Centre. Therefore, for obtaining B. Voc. degree a student will have to complete all semesters successfully within 4 years/8 semesters.

Choice Based Credit and Grading System (CBCS):

The choice based credit and grading system has been adopted. This provides flexibility to make the system more responsive to the changing needs of our students, the professionals and society. It gives greater freedom to students to determine their own pace of study.

- Students will have to earn 60 credits for the award of one year Diploma in Vocation (D. Voc.) in Soil and Water Conservation & Management.
- Students will have to earn 120 credits for the award of two year Advance Diploma in Vocation (Adv. D. Voc.) in Soil and Water Conservation & Management.

Credit-to-contact hour Mapping:

One Credit would mean equivalent of 15 periods of 60 minutes each for theory lecture.

For laboratory course/ workshops/internship/field work/project, the credit weightage for equivalent hours shall be 50% that for lectures.

For self-learning, based on e-content or otherwise, the credit weightage for equivalent hours of study should be 50% or less of that for lectures.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Attendance:

Students must have 75 % of attendance in each course for appearing examination otherwise he / she will not be strictly allowed for appearing the examination of each course. However, students having 65 % attendance may request Head of the concerned Institution for the condonance of attendance on medical ground.

Evaluation Methods:

The assessment will be based on Continuous Internal Assessment (CIA) and semester end examination (SEE). There shall Continuous Internal Assessment for each theory paper. Marks obtained by the student in all heads viz. CIA and ESE shall be added while declaring the final result.

Continuous Internal Assessment (CIA):- The internal marks shall be assigned on the basis of tutorials/home assignment/seminar presentation/field Visit Report/Project Report and weekly tests/class test/ preliminary examination to be conducted by the concerned college. These marks shall be communicated to the University before commencement of semester end examination.

End Semester Examination (ESE):

The end semester examination for each theory and practical paper shall be conducted by the University at the end of each semester.

Duration of theory examination shall be of three hours for a paper of 80 marks and one and one half hour for a paper of 40/50 marks. Practical examinations shall be of three hour duration for every semester end examinations respectively.

The respective college is advised to arrange maximum number of experiments from the list of experiments provided with the syllabus or experiments based on theory syllabus.

Semester end practical examination will be of 100 marks and 50 marks will be for internal examination. Student must perform at least eight experiments from each laboratory course. The semester end practical examination will be conducted at the end of each semester along with the theory examination.

Students without certified journal shall not be allowed to appear for the practical examination.

Examination Scheme

A student shall be evaluated for his/her academic performance in a course through class tests, tutorials, practical, homework assignments, term papers, field work, seminars, quizzes, Test examinations, teachers assessments and the End-Semester Examination as applicable.

At the end of the semester, there would be an End Semester Examination as per syllabus. For the

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

examination of First Year for the academic year 2018-2019, the minimum percentage for passing for each course code, practical examination and ESE is 40 %, failing which he/she will get F grade for that course code. This rule will be progressively applicable for higher classes in next consecutive years.

The project work shall be evaluated by midterm seminar(s), quality of work carried out, project report submission and the viva-voce examinations.

The industrial/field training shall be evaluated through the quality of work carried out, the report submission and presentation(s).

Rule for Combined Passing:

To pass the examination a candidate must obtain minimum 40% of Marks in each End Semester Examination & CIA taken together, however the candidate must obtain minimum 35% of Marks at the End Semester Examination.

To pass a subject where there is no provision of class test, the candidate must obtain 40% of Marks in the End Semester Examination.

If the candidate remains absent for CIA, his performance should be treated as "Zero" Marks.

Results Grievances / Redressal :

Grievances / redressal committee will be constituted in the college to resolve all grievances relating to the evaluation. The committee shall consist of the Principal of the college, the concerned teacher of a particular course and senior faculty member. The decision of Grievances/ redressal committee will have to be approved by Competent Authority.

Earning Credits:

At the end of every semester, a letter grade will be awarded in each course for which a student had registered. A student's performance will be measured by the number of credits that he/she earned by the weighted Grade Point Average (GPA). The SGPA (Semester Grade Point Average) will be awarded after completion of respective semester and the CGPA (Cumulative Grade Point Average) will be awarded by the university at the respective exit point.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Grading System:

- The grading reflects a student-own proficiency in the course. A ten point rating scale shall be used for the evaluation of the performance of the students to provide letter grade for each course and overall grade for the B.Voc. Programme. Grade points are based on the total number of marks obtained by him / her in all heads of the examination of the course. The grade points and their equivalent range of marks are shown in Table-I

Table I: Ten point grade and grade description

Marks Obtained (%)	Grade Point	Letter Grade	Description
90-100	9.00- 10	O	Outstanding
80-89	8.00-8.90	A++	Exceptional
70-79	7.00-7.90	A+	Excellent
60-69	6.00-6.90	A	Very Good
55-59	5.50-5.90	B+	Good
50-54	5.00-5.40	B	Fair
45-49	4.50-4.90	C++	Average (Above)
41-44	4.1-4.49	C	Average
40	4.0	P	Pass
< 40	0.0	F	Fail (Unsatisfactory)
	0.0	AB	Absent

Non-appearance in any examination / assessment shall be treated as the students have secured zero marks in that subject examination / assessment.

Minimum P grade (4.00 grade points) shall be the limit to clear / pass the course / subject. A student with F grade will be considered as "failed" in the concerned course and he / she has to clear the course by appearing in the next successive semester examinations.

Every student shall be awarded grade points out of maximum 10 points in each subject (based on 10 point scale). Based on the grade points obtained in each subject, Semester Grade Point Average (SGPA) and then Cumulative Grade Point Average (CGPA) shall be computed. Results will be announced at the end of each semester and CGPA will be given at respective exit point.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Computation of SGPA (Semester Grade Point Average) and CGPA (Cumulative Grade Point Average)

Grade in each subject / course will be calculated based on the summation of marks obtained in all modules.

The computation of SGPA and CGPA will be as below

- Semester Grade Point Average (SGPA) is the weighted average points obtained by the students in a semester and will be computed as follows,

$$\text{Student SGPA} = \frac{\text{Sum (Course Credits) X Number of Grade Points in concerned Course Gained by the}}{\text{Sum (Course Credits)}}$$

The SGPA will be mentioned on the grade card at the end of every semester.

- The Cumulative Grade Point Average (CGPA) will be used to describe the overall performance of a student in all semester of the course and will be computed as under.

$$\text{CGPA} = \frac{\text{Sum (All six Semester SGPA)}}{\text{Total Number of Semester}}$$

The SGPA and CGPA shall be rounded off to the second place of decimal.

Grade Card

Results will be declared and the grade card (containing the grades obtained by the student along with SGPA) will be issued by the university after completion of every semester. The grade card will be consisting of following details.

Title of the courses along with code opted by the student.

Credits associated with the course.

Grades and grade points secured by the student.

Total credits earned by the student in a particular semester.

Total credits earned by the students till that semester.

SGPA of the student.

CGPA of the student (at respective exit point).

Cumulative Grade Card

The grade card showing details grades secured by the student in each subject in all semesters along with overall CGPA will be issued by the University at respective exit point.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Curriculum :

Semester wise Paper No., Paper title, number of credits for each paper, and the examination pattern

First Year									
SEMESTER – I									
Paper No.	**Paper Title**	**No. of Credits**	**Lectures Per Week**		**Exam Pattern (Marks)**				
					Theory		**Practical**		**Total**
			Th.	**Pr.**	**CIA**	**ESE**	**CIA**	**ESE**	
General Component									
P-1 GC101T	Communication Skills – I	4	3		20	80			100
P-2 GC102T	Environmental Studies – I	4	3		20	80			100
P-3 GC103TP	Computer Fundamental – I	4	2	1	10	40		50	100
Skill Component									
P-4 SC3104T	Fundamentals of Soil and Soil Science	3	4		25	50			75
P-5 SC3105T	Fundamentals of Hydrology	3	4		25	50			75
P-6 SC3106P	Lab Course - I	6		2			50	100	150
P-7 SC3107P	Lab Course - II	6		2			50	100	150
	Total	**30**			**100**	**300**	**100**	**250**	**750**
SEMESTER – II									
General Component									
P-8 GC201T	Communication Skills – II	4	3		20	80			100
P-9 GC202T	Environmental Studies – II	4	3		20	80			100
P-10 GC203TP	Computer Fundamental – II	4	2	1	10	40		50	100
Skill Component									
P-11 SC3204T	Soil and Landscaping	3	4		25	50			75
P-12 SC3205T	Basics Of Irrigation	3	4		25	50			75
P-13 SC3206P	Lab Course - I	6		2			50	100	150
P-14 SC3207P	Lab Course - II	6		2			50	100	150
	Total	30			100	300	100	250	750

Nomenclature- **GC** General Component; **SC** Skill Component; **CIA**=Continuous Internal Assessment; **ESE**=End Semester Examination

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Semester wise Paper No., Paper title, number of credits for each paper, and the examination pattern

Second Year									
SEMESTER – III									
Paper No.	**Paper Title**	**No. of Credits**	**Lectures Per Week**		**Exam Pattern (Marks)**				
					Theory		**Practical**		**Total**
			Th.	**Pr.**	**CIA**	**ESE**	**CIA**	**ESE**	
General Component									
P-15 GC301T	Aptitude and logical Reasoning	4	3		20	80			100
P-16 GC302T	Principles of Management	4	3		20	80			100
P-17 GC303T	Database Management System	4	3		20	80			100
Skill Component									
P-18 SC3304T	Soil Conservation and Survey	3	4		25	50			75
P-19 SC3305T	Soil and Water Management	3	4		25	50			75
P-20 SC3306P	Lab Course-I	6		2			50	100	150
P-21 SC3307P	Lab Course-II	6		2			50	100	150
	Total	**30**			**110**	**340**	**100**	**200**	**750**
SEMESTER – IV									
General Component									
P-22 GC401T	Business Statistics	4	3		20	80			100
P-23 GC402T	Industrial Psychology	4	3		20	80			100
P-24 GC403T	E-Commerce	4	3		20	80			100
Skill Component									
P-25 SC3404T	Soil and Water Conservation Techniques	3	4		25	50			75
P-26 SC3405T	Soil and Water Pollution & Act	3	4		25	50			75
P-27 SC3406P	Lab Course-I	6		2			50	100	150
P-28 SC3407P	Lab Course-II	6		2			50	100	150
	Total	**30**			**110**	**340**	**100**	**200**	**750**

Nomenclature- **GC**-General Component; **SC**-Skill Component; **CIA**=Continuous Internal Assessment; **ESE**=End Semester Examination

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Semester wise Paper No., Paper title, number of credits for each paper, and the examination pattern

Third Year									
SEMESTER – V									
Paper No.	**Paper Title**	**No. of Credits**	**Lectures Per Week**		**Exam Pattern (Marks)**				
					Theory		**Practical**		**Total**
			Th.	**Pr.**	**CIA**	**ESE**	**CIA**	**ESE**	
General Component									
P-29 GC501T	Campus to Corporate	4	3		20	80			100
P-30 GC502T	Entrepreneurship development	4	3		20	80			100
P-31 GC503T	Business Economics	4	3		20	80			100
Skill Component									
P-32 SC3504T	Farm Irrigation Systems	3	4		25	50			75
P-33 SC3505T	Wells, Pumps & Drainage Engineering	3	4		25	50			75
P-34 SC3506P	Lab Course-I	6		2			50	100	150
P-35 SC3507P	Lab Course-II	6		2			50	100	150
	Total	**30**			**110**	**340**	**100**	**200**	**750**
SEMESTER – VI									
General Component									
P-36 GC601T	Research Methodology	4	3		20	80			100
P-37 GC602T	Human Resource Management	4	3		20	80			100
P-38 GC603T	Principles of Marketing	4	3		20	80			100
Skill Component									
P-39 SC3604T	Seminar I,II,III,	6							150
P-40 SC3605P	Project / Dissertation	12							300
	Total	**30**							**750**

Nomenclature- **GC**-General Component; **SC**-Skill Component; **CIA**=Continuous Internal Assessment; **ESE**=End Semester Examination

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Continuous Internal Assessment

1. Paper No. GC101T &GC201T **Communication Skills – I &Communication Skills – II.**
   Total 20 Marks: 10 marks for test and 10 marks for Language lab practical/ Assignments.
2. GC102T & GC202T **Environmental Studies – I & Environmental Studies – II**
   Total 20 Marks: 10 marks for test and 10 marks for Tutorial / field Visit Report/Project Report/ Assignments.
3. Paper No. GC103TP & 2013TP **Comp. Fundamental –I & Comp. Fundamental –II**
   Total 10 Marks: 5 marks for test and 5 marks for Tutorial / Assignments.

All Skill Components:

Total 25 Marks: 15 marks for test and 10 marks for Tutorial / field Visit Report/Project Report/ Assignments.

End Semester Examination(ESE)

Theory ExaminationQuestion Paper Pattern

General Component

1. Paper No. - 1 GC101T **Communication Skills – I**
2. Paper No. - 2 GC102T **Environmental Studies – I**
3. Paper No. - 8 GC201T **Communication Skills – II**
4. Paper No. - 9 GC202T **Environmental Studies – II**
5. Paper No. - 15 GC301T **Aptitude and Logical Reasoning**
6. Paper No. - 16 GC302T **Principles of Management**
7. Paper No. - 17 GC303T **Database Management System**
8. Paper No. - 22 GC401T **Business Statistics**
9. Paper No. - 23 GC402T **Industrial Psychology**
10. Paper No. - 24 GC403T **E - Commerce**
11. Paper No. - 29 GC501T **Campus to Corporate**
12. Paper No. - 30 GC502T **Entrepreneurship development**
13. Paper No. - 31 GC503T **Business Economics**
14. Paper No. - 36 GC601T **Research Methodology**
15. Paper No. - 37 GC602T **Human Resource Management**
16. Paper No. - 38 GC603T **Principles of Marketing**

Q. No.	Particular	Marks
1	MCQ/ Fill in the blanks/ Match the pair/ True or False	10
2	Answer in one sentence	10
3, 4 & 5	a. Short answer questions OR b. Short answer questions	10 10
6 & 7	a. Long answer questions OR b. Long answer questions	15 15
	Total Marks	**80**

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

1. Paper No. - 3 GC103T **Computer Fundamental – I**
2. Paper No. - 10 GC203T **Computer Fundamental – II**

Q. No.	Particular	Marks
1	MCQ/ Fill in the blanks/ Match the pair/ True or False	10
2	Answer in one sentence	10
3 & 4	a. Short answer questions OR b. Short answer questions	10 10
5	a. Long answer questions OR b. Long answer questions	10 10
	Total Marks	**50**

SkillComponent: For all Theory papers

Q. No.	Particular	Marks
1	MCQ/ Fill in the blanks/ Match the pair/ True or False	10
2	Answer in one sentence	10
3 & 4	c. Short answer questions OR d. Short answer questions	10 10
5	c. Long answer questions OR d. Long answer questions	10 10
	Total Marks	**50**

Practical Examination

Question Paper Pattern of ESE

For Practical of Paper No: GC103TP & GC203TP**Computer Fundamental – I&Computer Fundamental – II**

Q. No.	Particular	Marks
1	Record Book	10
2	Viva	10
3	1/2 Practical/s	30
	Total Marks	**50**

For All Skill Components

Q. No.	Particular	Marks
1	Record Book	20
2	Viva	20
3	1/2/3 Practical/s	60
	Total Marks	**100**

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. First Year

(Soil and Water Conservation & Management)

Semester - I and II

B.Voc. Soil and Water Conservation & Management

Course : B. Voc. in SWCM **Semester - I** **4-Credits = 60** Lectures
PaperTitle: Communication Skills - I **Paper No. 1:** GC101T

Unit I : **25L**

1. **Introduction to Communication**
   Importance of Communication, Definition of Communication
   Elements of Communication,Communication process
2. **Types of Communication**
   Upward Communication, Downward Communication
   Horizontal Communication
3. **Method of Communication :** Verbal , Oral , Written

Unit – II: **20L**

4. **Written Communication**
   Punctuation marks.
   Grammar: Parts of Speech, tenses,
   vocabulary building, constructing para.
   'C's of good communication
   Language of business writing
5. **Oral Communication**
   Speeches and Presentation

Dialogues

Unit – III (English Language Lab) **15L**

3. **Listening Comprehension**
   Listening and typing – Listening and sequencing of sentences .
4. **Reading Comprehension and Vocabulary**
   Filling in the blanks - Cloze Exercises –
   Vocabulary building –
   Reading and answering questions.
5. **Speaking**
   a. Phonetics: Intonation – Ear Training – Correct Pronunciation – Sound recognition exercises - Common Errors in English
   b. Conversations:Face to Face Conversation -

Telephone conversation

Text Books

1. Business Communication , By UrmilaRai&S.M.Rai. Himalaya Pub.
2. Communication Skills for Effective Management ByDr.AnjaliGhanekar. Everest Pub. House.
3. Developing Communication SkillsByKrishna Mohan, MeeraBanerji. McMillan

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester - I** **4 -Crédits = 60** Lectures
PaperTitle: Environmental Studies - I **PaperNo. 2:** GC102T

Unit I :Multidisciplinary nature of environmental studies **15L**

Definition, scope and importance Need for public awareness.

Unit – II Natural Resources : Renewable and non-renewable resources. **15L**

Natural resources and associated problems.
a) Forest resources : Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
b) Water resources : Use and over-utilization of surface and ground water, floods,drought, conflicts over water, dams-benefits and problems.
c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
d) Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
e) Energy resources : Growing energy needs, renewable and non renewableenergy sources, use of alternate energy sources. Case studies.
f) Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
• Role of an individual in conservation of natural resources.
• Equitable use of resources for sustainable lifestyles.

Unit – III Ecosystems **15L**

Concept of an ecosystem.
• Structure and function of an ecosystem.
• Producers, consumers and decomposers.
• Energy flow in the ecosystem.
• Ecological succession.
• Food chains, food webs and ecological pyramids.
• Introduction, types, characteristic features, structure and function of the following ecosystem :-
a. Forest ecosystem b. Grassland ecosystem
c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans)

Unit – IV Biodiversity and its conservation **15L**

• Introduction – Definition : genetic, species and ecosystem diversity.
• Biogeographical classification of India
• Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values,
• Biodiversity at global, National and local levels.
• Inida as a mega-diversity nation, • Hot-sports of biodiversity.
• Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.
• Endangered and endemic species of India
• Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course : B.Voc. in SWCM **Semester - I** **4-Credits = 60** Lectures
PaperTitle: Computer Fundamentals–I **Paper No. 3:** GC103TP

UNIT – 1 **15L**

Fundamentals of Computer System
Characteristics & features of Computers, Components of Computers, Organization of Computer, Block Diagram of Computer, Input Devices : Touch screen , OMR, OBR , OCR, Light pen ,Scanners, Output Devices: Digitizers, Plotters, LCD Projector, Plasma Display, Printers, Software: Types of Software.

Windows Operating System
Windows Basics, Personalize your desktop, logoff, Hibernate, sleep mode, Connect various Devices to computer, personalize your computer, Desktop, Screen Saver, Themes, File name and extensions, Folder management. Use of various Applications of Windows(Viz. Paint, Calculator, sniping tool etc.), Windows help, use of paint to resize and edit a photo for upload

UNIT – II **15L**

Internet Basics: internet, Intranet, LAN, WAN, MAN, web browser, www, http and https, internet security (SSL), E-mail creation and operation, creating/registering to various sites, setting favorite, Browser options/setting for homepage, download, adding plugins to browser. Online booking: bus, railway, air tickets, hotel, movies etc. Bill payments: telephone, electricity, mobile recharge, etc. Searching Engines: Searching techniques.

Unit-III **30L**

MS-Word :
Word basic: Tabs and tools, their settings. Word Shortcuts. Inserting and formatting shapes, pictures, online pictures, smart arts, hyperlinks, headers and footers. Creating following Files in Word, Admission Form, I-Card, Bio-Data, Project Report, Certificate, Flayer, Letterhead, Envelop printing with address, Greeting Card, Notice, Labels using Mail Marg. Printing techniques

MS-PowerPoint:
PowerPoint Basics: Tabs and tools their settings, PowerPoint Shortcuts Applying Animation and Transition Effects. Inserting and formatting shapes, pictures, online pictures, smart arts, hyperlinks, headers and footers, Excel data. Creating Following outputs: Greeting card, Creating Photo Album, presentation on any 5 topics of Skill Components. Different views (Notes page Slide sorter etc.), Creating Handouts.

Reference:

- Fundamentals of Computers, B.Ram,
- Computer Fundamental, V. Rajaraman
- Microsoft Office – Complete Reference – BPB Publication

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester - I** **3-Credits = 45 Lectures**
PaperTitle:Fundamentals Of Soil and Soil Science **Paper No.4 : SC3104T**

Unit - 1:- Introduction of Soil and Soil Science. **03 L**

Soil and its types and depth Importance of Soil and its conservation.

Components of Soil, soil minerals, organic components,

Soil air, Soil water,Soil temperature, Soil organism.

Rocks and its types - Igneous rocks, sedimentary rocks and metamorphic rocks, **03 L**

Minerals - Primary and secondary minerals Soil formation - soil forming minerals.

Soil weathering - physical weathering, chemical weathering, biological weathering,**03 L**

humification and slope, compartments of land.

Unit - 2:-Role of soil biota in nutrient cycles **05 L**

Carbon cycles, Nitrogen cycles, Sulphur cycles & Phosphorous cycles.

Soil of Marathawada Region: **05 L**

Types of soil based on colour, on texture, on agro climatic zones and its characteristics.

Unit - 3:-Nutrients and their management: **06 L**

Importance of soil in relation to nutrient availability

Essential plant nutrients and their source availability

Deficiency symptoms of essential plant nutrients and method of correcting.

Unit - 4:-Soil fertility and plant productivity: **08 L**

Concept of soil fertility and plant productivity.

Causes of soil fertility and infertility.

Factors affecting soil fertility and plant productivity.

Soil fertility evaluation and fertilizer recommendation.

Methods of improvement of soil fertility and plant productivity.

Unit - 5:- Soil Conservation Survey **06 L**

Soil survey-Soil variability, destination of soil survey, importance fundamental and applied.

Types of soil survey, soil mapping unit & soil survey interpretation. Soil Survey Report.

General definition of a chak. Sub basin, Basin. **06 L**

Manageable chak size for irrigation.

Natural drains sub drains, Catchment, Command area.

Farmers water handling capacity. Units of measurement.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester - I** **3-Credits = 45** Lectures
PaperTitle: Fondamental of Hydrology. **Paper No. 5:** SC3105T

Unit - 1:- Introduction ofHydrology **5 L**

Hydrological cycle, Precipitation, infiltration.

Evaporation and transpiration, atmospheric run off.

Surface water hydrology - run off process estimation of runoff and hydrograph.

Ground water hydrology - aquifers, ground water hydraulics, safe yield, ground water collection system.

Collection of hydrological data, Rainfall, Evaporation Measurement. **5 L**

Introduction of remote sensing for data collection.

Types of instruments used and its function, method of observation, and its daily and routine maintenance.

Flow measurement of water equipments used calibration of measurement instrument.

Unit - 2:-Integrated sources of water **2 L**

Global water balance, Water distribution on earth, Water Users Association (WUA).

Surface watersources - river, lake, stream, pond etc. Drinking water, Cooling water,**3 L** irrigation water, fishing water, industrial water, recreation water and cultural water.

Ground water sources - Introduction, Hygroscopic water, capillary water, drainage**3 L** water or gravity water.

Types of Wells.Aquifers and its types.Hydraulics of wells, drilling methods. **4 L**

Types of tube well.Drilling methods. Alignment of tube wells. Testing yield of tube wells. Well casing. Gravel packing. Well development. Uses of water,

Types of Waste Water.Introduction of water treatment techniques. **2 L**

Unit - 3:- Introduction of Irrigation system: **7 L**

Importance of irrigation.History and development of irrigation in India.Layout of typical irrigation system in the region. Feeder canal / Canal Network - main canal Bridge canal, field channel, field drain, division box, culvert, bridge aqueduct. Functioning of WUA.

Unit - 4:- Monsoon in India **7 L**

Nature and types of rain fall. Convectional rain, relief rain, cyclonic rain and measurement of rain.Types of monsoon in India.Origin and characteristics of monsoon in India Indian Monsoon and Economics.Effective rain fall, Excess rainfall.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Unit - 5:- Water conservation and water harvesting **7 L**

Typesof water resources, management of water resources.

Type ofwater harvesting structures CCT, Nala bund, tank diversion works, irrigation works, minor, medium and major irrigation works of the region.

Concept of water availability.

Water quality.

References:

1. Watershed Management' by Dhruvanarayan V. V. &Shastri G. &Patnaik U. S. ICAR Publication 1989.
2. Principles of agricultural engineering vol. I & II by A. M. Michel, T.P.Ojha
3. Principles of drip irrigation system, Dr. M.S. Mane, B.L.Ayare,Dr. S.S.Magar., New Delhi
4. Principles of sprinkler irrigation, Dr. M.S. Mane, Dr.B.L.Ayare. Jain Bros., New Delhi
5. Practical Agricultural Engineering by Ghosh R. K. and Swain S. Vol. I &II., NayaPrakash, Calcutta (1993)
6. 'Soil & Water Conservation Engineering' by Suresh R. Standard Publishers & Distributors, (1997)
7. 'Principals of Agricultural Engineering' by A. M. Michael & T. P. Ozha by Jain Publishers Vol.I& II.
8. Irrigation - Theory & Practice by Michael A. M. (1998) - Vikas Publishing House, New Delhi.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester - I** **6-Credits= 90** Lectures
PaperTitle: Lab Course - I **Paper No. 6:** SC3106P

Syllabus of Practical:-

1. Collection and visual examination of different types of soils and samples.
2. Demonstration of different horizons of local soil profile
3. To study the soil texture and find out the percentage of sand, silt and clay content of soil.
4. To determine the soil PH by PH paper method, by using universal indicator and by using PH meter.
5. To determine water holding capacity of soil
6. To find out porosity (% pore space) of given soil sample
7. To determine electrical conductivity of given soil sample
8. Determination of available phosphorus in soil
9. Determination of available potassium in soil
10. Determination to total nitrogen content of soil
11. Determination of organic carbon of soil
12. Identification of a chak
13 Collection and visual examination of pumps used for lifting water for irrigation.
14. Field work and project work.

References:

1. Practical Agricultural Engineering by Ghosh R. K. and Swain S. Vol. I &II., NayaPrakash, Calcutta (1993)
2. 'Soil & Water Conservation Engineering' by Suresh R. Standard Publishers & Distributors, (1997)
3. 'Principals of Agricultural Engineering' by A. M. Michael & T. P. Ozha by Jain Publishers Vol.I& II.
4. Irrigation - Theory & Practice by Michael A. M. (1998) - Vikas Publishing House, New Delhi.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester - I** **6-Credits = 90** Lectures
PaperTitle: Lab Course - II **Paper No. 7:** SC3107P

Syllabus of Practical:-

1. Collection and visual examination of water samples: e.g. surface water, well water, waste water etc.
2. Measurement of rain water by rain gauge
3. Demonstration of drainage layout in the field.
4. Layout of different irrigation methods - surface, subsurface.
5. Layout of different irrigation methods sprinkler, micro sprinkler and drip.
6. Study of equipments required for irrigation system - tentio meter, sprinkler, micro sprinkler, drip.
7. Study of equipments required for irrigation system surface irrigation, V-notch, water meter.
8. Measurements of quality and verification of performance of a water pump.
9. Area capacity table and silting and desilting of water tank.
10. Visit to the area having different irrigation system. A report should be submitted at the time of Practical.

References:

1. Watershed Management' by Dhruvanarayan V. V. & Shastri G. & Patnaik U. S. ICAR Publication 1989.
2. Principles of agricultural engineering vol. I & II by A. M. Michel, T.P.Ojha
3. Principles of drip irrigation system, Dr. M.S. Mane, B.L.Ayare,Dr. S.S.Magar., New Delhi
4. Principles of sprinkler irrigation, Dr. M.S. Mane, Dr.B.L.Ayare. Jain Bros., New Delhi

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester-II** **4-Credits=60** Lectures
PaperTitle: Communication Skills - II **Paper No. 8:** GC201T

Unit I : **25L**

Written media of Communication: Letters, Notices, Minutes, Manual, Leaflet, Complaints & Suggestion, Job Application,Visual Media of communication: slide presentation, Pictures & Photographs, Posters & Advertisement ,Non-Verbal Media of Communication,Types of Report, characteristics of Good Report , Essential Requisites of Good Report-Writing, Planning the Report, Outlining Issues for Analysis,Writing the Reports.

Unit – II: **20L**

Problem of Group Communication- Meeting - types of meeting, Advantages & Disadvantages of Meeting, - Preparation for Meeting – conduct of a Meeting – Responsibility of participants. Purpose, Types of interviews – promotion, appraisal, exit, telephone.

Employment or selection Interview : Candidate's preparation, Question commonly asked in interview, role of interviewer, Interviewer's preparation.

Unit – III (English Language Lab) **15L**

Cassettes: *"Tiger's Eye"* Series.(vol. 1 & 2) , *"Twist in the Tail"* , The Listening drill is to be given and question should be framed., Reading with proper pronunciation and ideal reading is to be recorded., CIEFL' Spoken English exercises part one and two, Drilling : Proper Pronunciation of word and sentences

Text Books

1. Business Communication , By UrmilaRai&S.M.Rai. Himalaya Pub.
2. Communication Skills for Effective Management ByDr.AnjaliGhanekar. Everest Pub. House.
3. Developing Communication SkillsByKrishna Mohan, MeeraBanerji. McMillan

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester-II** **4-Credits=60** Lectures
PaperTitle: Environmental Studies - II **PaperNo. 9:** GC202T

Unit I : **15L**

The Multi-disciplinary Nature of Environmental Studies:
Definition, scope and importance, Need for Public Awareness, Ecology and Ecosystems: Definition of Ecology, Structure and function of an ecosystem, Producers, Consumers and Decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids, Introduction, types, characteristics features and function of – forest ecosystem, grassland ecosystem, desert ecosystem, aquatic ecosystem(ponds, streams, lakes, rivers, oceans, estuaries)

Unit – II **15L**

Biodiversity and its conservation:
Introduction, genetic, species and ecosystem diversity definition, value of biodiversity, biodiversity at global, national and local levels ,India as a mega diversity nation, hot spots of biodiversity, threats to biodiversity – habitat lose, poaching of wild life, man wild life conflicts, endangered and endemic species of India, conservation of bio diversity in in-situ EX-situ

Unit – III **15L**

Natural Resources:
Air resources-features, composition, structure, air quality management, forest resources-, water resources, mineral resources, food resources, energy resources, land resources, Environmental pollution: definition, air pollution, water pollution, marine pollution, thermal pollution, soil pollution, noise pollution, nuclear hazards, waste management, cleaner technologies, reuse and recycling, solid waste management, role of individuals to prevent pollution, pollution case studies, disaster management – floods, earthquake, cyclone and landslides

Unit – IV **15L**

Social issues and the environment:
From unsustainable to sustainable development, urban problems related to energy, water conservation, rain water harvesting, water shed management, resettlement and rehabilitation of people- it's problems andconcerns, case studies, environmental ethics- environmental value relationships, environmental ethics and species preservation, climate change, global warming, acid rain, Ozone layer depletion, nuclear accidents and holocaust, case studies, waste land reclamation, consumerism and waste products, legislation to protect the environment, environmental protection act, dir(prevention and control of pollution) act, water(prevention and control of pollution) act, wild life protection act, forest conservation act, environmental management systems(EMS), environmental information systems(EIS), P.I.L public hearing and role of NGOS, ISO 9000 and 14000, issues involved in enforcement of environment legislation,public awareness, environmental economics-environment and standard of living

Reference:

- Kiran B Chokkas and others : "Understanding Environment", Sage 2004
- P. VenugopalaRao, Environmental Science & Engineering, PHI
- Benny Joseph: Environmental Studies, Tata McGraw Hill
- Lester R Brown, Plan B: rescuing a Planet under stress and a civilization introuble,
- Orient LongmanKurien Joseph & R Nagendran, Essentials of Environmental Studies,Pearson

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester-II** **3-Credits=45** Lectures
PaperTitle: Computer Fundamentals-II **Paper No. 10:** GC203T

Unit –I **15L**

Printing and Scanning:

Types of Printers their advantages and disadvantages, Installation of printer driver, Printer setting, Printer shearing, Default printer setting, Printing in different software. Types of Scanners their advantages and disadvantages, Installation of scanner driver, Scanner settings for file size and image resolution, saving as Image, PDF.

Projector: Connecting projector to Desktop, Laptop, projector setting.

Windows Control Panel: Windows Shortcuts, Windows Updates, Firewall, Power Options, Backup and Restore, Clock Language and Region setting,

Unit –II **15L**

Outlook:

Outlook Basics Tabs and tools, Crating Contacts, Scheduling Appointments, Task, Events, Setting status of a task and its priority. Configuring an email account to outlook. Sending and receiving mail

Internet :

Internet Banking, online payments do and don't. do and don't while Password setting Adhar update, registration on various government sits.

Unit –III **30L**

MS-Excel :

Excel basic: Tabs and tools, their settings. Excel Shortcuts. Number Formatting, Conditional Formatting, Sorting and Filters, Inserting and formatting shapes, pictures, online pictures, smart arts, hyperlinks, headers and footers. Charts and their types, Formula Fundamentals Syntax of a formula. Printing techniques. References: Absolute and Relative. Creating following Files in Excel, Time Table, Result sheet, Invoice, Income and Expenditure, Budget sheet etc.

References:

- Fundamentals of Computers, B.Ram,
- Computer Fundamental, V. Rajaraman
- Microsoft Office – Complete Reference – BPB Publication

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester-II** **3-Credits=45** Lectures
PaperTitle: Soil and Landscaping **Paper No. 11:** SC3204T

Unit - 1:- Soil structure and properties:

Soil profile &Soil structure- Classification according to shape and size of soil particles, importance of soil structure and texture. **2 L**

Physical properties - colour, texture, pore space, density, infiltration, moisture content, soil weight and soil temperature. **2 L**

Chemical properties - PH, buffer capacity, salinity, ion-exchange capacity, base saturation. **2 L**

Biological properties - soil organisms, bacteria, fungi, algae, protozoa, nematodes, earthworms. **2 L**

Soil organic matter - total organic matter, humus, effect of organic matter on Physical and chemical properties of soil. **2 L**

Unit - 2:- Soil erosion and soil conservation : **3 L**

Concept of soil erosion, Types of soil erosion, erosion by water, erosion by wind.

Factors causing soil erosion - water, soil structure sort type, soil vegetation, wind and animals. Methods to stop soil erosion, Concept of soil conservation. **3 L**

Methods of soil conservation - Contour bunding, Nalabunding, Graded bunding, Compartment bunding, strip sowing, contour cultivation. **3 L**

Terracing - channel terrace, irrigation terrace, orchard terrace, Bench terrace **2 L**

Unit - 3:- Soil moisture-

Introduction, importance of soil moisture estimation, soil moisture constants. **1 L**

Available water, Factors affecting on moisture availability to crop. **1 L**

Soil moisture - field length, vegetative cover, and organic matter. **1 L**

Topography and soil losses due to soil erosion. **1 L**

Control of wind erosion - stubble mulching, minimum tillage, crop cover, strip cropping, crop rotation, wind breaker, shelter belts. **2 L**

Unit - 4:- Causes & Improvement Of Degraded Soil

i) Release of salts from rocks & minerals, composition of rain water, river water, canal or reservoir water and sea water. **2 L**

ii) Properties of different salts - Chlorides, carbonates, sulphates, bicarbonates& nitrates of calcium, magnesium, sodium & potassium. **2 L**

iii) Role of soil slope, minerals, quality of irrigation water, climate and vegetation cover on salinity & alkalinity of soil. **2 L**

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

iv) Reclamation of saline & acidic soils. **2 L**

Unit - 5:- Landscaping and Garden Design

History of landscaping, Principle of design and planning information. **2 L**

Drawing and cost. Garden designs, Material & Equipment. **2 L**

Garden Art – Statues, sundials and figurines. **2 L**

Landscape managements.Landscaping for sports & games. **2 L**

Maintenance of a new Landscape. **2 L**

References :

1) Soil survey manual - All India soil & land use survey organization. IARI New Delhi - 110 012.

2) Soil taxonomy, basic system of soil classification for making & interpreting soil survey. Agriculture Handbook No. 36, Nbss&Lup Publication New Delhi.

3) Soil & water conservation engineering by Schwab, FravertEdminster& Barnes John Wiley and Sons Publication.

4) Soil conservation in India I.C.A.R. New Delhi, Ramarao, M.S.V. - 1962.

5) Manual of soil & water conservation practices by Gurmelsingh, C. Venkatraman, G.Sastry-1990. Oxford & J.B.H. Publication, New Delhi.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course : B. Voc. in SWCM **Semester-II** **3-Credits=45** Lectures
PaperTitle: Basics of Irrigation **Paper No. 12:** SC3205T

Unit - 1:- Introduction **4 L**

Irrigation- definition, importance, irrigation scheduling. Infiltration-definition, infiltration rate, factors affecting infiltration rate, water losses. Percolation, seepage – definition, water losses and factors affecting water losses, excess/deficit irrigation.

Unit - 2:- Irrigation water

Methods of Irrigation - surface, subsurface, sprinkler, micro sprinkler, drip. **3 L**

Principles and practices of Irrigation, **1 L**

Water management, problems of irrigated agriculture in Maharashtra. **2 L**

Identification of resources - selection of land for irrigation, planning for irrigation with reference to soil and cropping system. **2 L**

Critical growth stages of crops - response of crops and selection of type of crop as per water avability and market condition. **2 L**

Irrigation efficiency, water use efficiency and factors affecting them. **2 L**

Increasing water use efficiency by soil and crop management techniques **2 L**

Quality and characteristics of irrigation water

Unit - 3:- Irrigation methods: **2 L**

Surface method - surface ditches, underground pipe, portable pipe, devices to Control water flow, flooding, graded boarders, level boarders, furrow.

Sub surface method or sub irrigation method **2 L**

Sprinkler method - sprinkler system, components types, evaporation losses, systems for environmental control, system for fertilizer, chemical or west applications.

Drip irrigation or trickle irrigation method. **3 L**

Advantages and disadvantages of each system.

Irrigation management under limited water supply **1 L**

Unit - 4:-Micro irrigation system **6 L**

Sprinkler irrigation system - definition advantages and disadvantage its components, factors affecting water distribution, measurement of uniformity coefficient of sprinkler irrigationmethod;

Drip irrigation system/ trickle irrigation - definition, definition, advantages and disadvantage, its components, factors affecting water distribution, Comparisons of drip and **6 L**

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

sprinkler irrigation system. Measurement of uniformity coefficient of drip irrigation method. Liquid fertigation.

Unit - 5:-Quality of water for irrigation **3 L**

Criteria for assessment of water quality, standards & consideration in the assessment of suitability of irrigation water. Relation between water quality & soil properties - salinity, sodium hazards, boron & fluoride hazards.

Measurements of irrigation water supply, rotation method of supply of irrigation **4L** water, preparation of water bill. Water rates, water law. Functioning of bit, sub division, division of an irrigation system. Duties and responsibilities of officers, WUA, beneficiaries etc. Drain network in command area, existing laws, quality and quantity of drained water.

References :

1) Soil survey manual - All India soil & land use survey organization. IARI New Delhi - 110 012.

2) Soil taxonomy, basic system of soil classification for making & interpreting soil survey. Agriculture Handbook No. 36, Nbss&Lup Publication New Delhi.

3) Soil & water conservation engineering by Schwab, FravertEdminster& Barnes John Wiley and Sons Publication.

4) Soil conservation in India I.C.A.R. New Delhi, Ramarao, M.S.V. - 1962.

5) Manual of soil & water conservation practices by Gurmelsingh, C. Venkatraman, G.Sastry-1990. Oxford & J.B.H. Publication, New Delhi.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester-II** **6-Credits=90** Lectures
PaperTitle: Lab Course – I **Paper No. 13:** SC3206P

Syllabus of Practical:-

1) Study of soil survey equipments.
2) Preparation of soil survey report
3) Determination of runoff from the watershed.
4) Estimation of water erosion losses.
5) Estimation of wind erosion losses.
6) Design and layout of contour bunding / graded bunding.
7) Study in situ moisture conservation techniques - Ridges & furrows / broad bed. furrow / dead furrow / tide ridges / scooping / compartmental bunding.
8) Analysis of saturation extract of saline & acidic soils.
9) Determination of Gypsum requirement for acidic soils.
10) Landscape design, drawing and cost.
11) Training on site of Landscaping .
12) Design and layout drains commands.
13) Addition of fertilizer, precaution in applying pesticides, fertilizers.
14) Do and Dont's in irrigation water supply from canals.
15) Visit to watershed project.
16) Project Report.

References :

2) Soil survey manual - All India soil & land use survey organization. IARI New Delhi - 110 012.

2) Soil taxonomy, basic system of soil classification for making & interpreting soil survey. Agriculture Handbook No. 36, Nbss&Lup Publication New Delhi.

3) Soil & water conservation engineering by Schwab, FravertEdminster& Barnes John Wiley and Sons Publication.

4) Soil conservation in India I.C.A.R. New Delhi, Ramarao, M.S.V. - 1962.

5) Manual of soil & water conservation practices by Gurmelsingh, C. Venkatraman, G.Sastry-1990. Oxford & J.B.H. Publication, New Delhi.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester-II** **6-Credits = 90** Lectures
PaperTitle: Lab Course – II **Paper No. 14:** SC3207P

Syllabus of Practical:-

1. Determination pH of irrigation water.
2. Determination of conductivity of irrigation water
3. Determination of suspended and dissolved solid context of water
4. Analysis of irrigation water for chloride.
5. Analysis of irrigation water for calcium and magnesium.
6. Analysis of irrigation water for sulphate.
7. Analysis of irrigation water for carbonate and bicarbonate and interpretation of data.
8. Determination of Sodium and Potassium of irrigation water
9. Determination of sodium absorption Ratio of irrigation water (SAR).
10. Determination of Residual Sodium Carbonates of irrigation water (RSC).
11. Observation of leakages, seepage from an irrigation system.
12. Routine M & R of an irrigation structure like KTwein, storge tank, Canal etc.
13. Routine M & R to drip / sprinkle system.
14. Routine M & R to water pump.
15. Routine M & R to operating structure like HR gate, Syphons, annuduet etc.
16. Field visit and report.

References :

3) Soil survey manual - All India soil & land use survey organization.
IARI New Delhi - 110 012.

2) Soil taxonomy, basic system of soil classification for making & interpreting soil survey. Agriculture Handbook No. 36, Nbss&Lup Publication New Delhi.

3) Soil & water conservation engineering by Schwab, FravertEdminster& Barnes John Wiley and Sons Publication.

4) Soil conservation in India I.C.A.R. New Delhi, Ramarao, M.S.V. - 1962.

5) Manual of soil & water conservation practices by Gurmelsingh, C.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Second Year

(Soil and Water Conservation & Management)

Semester - III and IV

Course : B. Voc. in SWCM **Semester-III** **4-Credits=60** Lectures
PaperTitle: Aptitude and Logical Reasoning **PaperNo. 15:** GC301T

UNIT-I: Reasoning Ability & General English

Reasoning Ability: Data interpretation (bar chart, pie chart, line chart,tables) , number series, blood relations, odd series, Distance and Direction etc.

General English: Vocabulary, synonyms, Antonyms, Word formation, Passage reading,

Arithmetic: Number System, Simplification, Square root & Cube root, Surds and Indices, HCF, LCM Decimal fraction, Average.

UNIT-II: Percentage, Problem on Ages, Partnership, Profit & loss, Ratio & proportion.

UNIT-III: Probability, Permutation and combination.

UNIT-IV: Set theory, properties of sets, Venn diagram .

Suggested Readings:

1 Quantitative Aptitude by R.S. Agarwal

2. Verbal & Non-verbal Reasoning by R.S. Agarwal

3. English Grammar, Wren & Martin

4. Cracking the Test of Reasoning & Data Interpretation, Prof. Jagdeep Vaishnav, Nishant B. Patel, Biztantra

5. Test of Reasoning, Edgar Thorpe, Tata-McGraw Hill, 200

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester-III** **4-Credits=60** Lectures
PaperTitle: Principles of Management **PaperNo. 16:** GC302T

---

1. Introduction: - Concept of Management, Scope, Functions and Principles of Management, Evolution of Management thought.Contribution of F.W. Taylor, Henry Fayol, Mary Parker follett, Elton Mayo, Peter Drucker. **15 L**

2. Planning: - The Process of Planning, Objectives, Policy and Procedures, Forecasting and Decision Making. **15 L**

3. Organizing: - Meaning, Importance and Principles, Span of Management, Centralization and Decentralization, Patterns of Organization, Line and Staff Relationships. **15 L**

4. Staffing: - Nature & Scope of Staffing, Manpower Planning, Selection & Training, Performance Appraisal. **8 L**

5. Controlling: - Concept or Managerial Control, Control aids, Score Responsibilities of Managers. **7 L**

Books Recommended: -

Management & Organizations Behaviour— by Paul Hersey & Ken Blanchard

Essentials of Management— by Paul Hersey & Ken Blanchard

Principal and Practice of Management— by L.M. Prasad

Human Behavior at Work— by Kaith Devis

Organizational Behavior— by Robbins

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course : B. Voc. in SWCM **Semester-III** **4-Credits=60** Lectures
PaperTitle: Database Management System **PaperNo. 17:** GC303T

Unit – I **15 L**

Basic Concept

Data Definition, Types of Data, Record and File, Database System Application, Purpose of Database System, Component of a DBMS: Users, Facilities & Structure, Advantageous & Disadvantageous of DBMS

Data Modeling & Design

Data Association – Entities, Attributes & Association, Relationship among Entities, Types of Data Model: Relational, ER, Semi-structured, Object-Oriented, Advantageous & Disadvantageous of above model

Unit – II **15 L**

Entity-Relationship Data Model

Entity, Entity Set, Types of Entities, Strong & Weak Entity, Representation, Attribute, Types of Attributes, Representation

Relational Data Model

Basic Structure of Relational Data Model, Database Schema, Constraints: Integrity Rule 1 & 2, Normal Form: Anomalies, Functional Dependency, Dependency Diagram, First Normal Form, Second Normal Form, Third Normal Form

Unit-III **15 L**

Structured Query Language

DDL Statements to Create and Manage Tables using Create & Alter, Manipulating Data using Insert, Update & Delete Statement, Retrieving Data Using SQL Select, Restricting and Sorting Data, Using Single Row functions, Conversion Functions and Conditional Expressions, Aggregated Data Using Group Function, Displaying data from Multiple tables.

Unit – IV **15 L**

Data Storage

Overview of Physical Storage Media, Magnetic Disk

Transaction Processing

Transaction Concept, Transaction State

Reference Books:

1) Database System Concepts (Sixth Edition) Avi Silberschatz, Henry F. Korth,S. Sudarshan
2) An Introduction to Database Systems by Bipin C. Desai

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course: B. Voc. in SWCM **Semester - III** **3 - Credits = 45** Lectures
Paper Title:- Soil Conservation and Survey. **Paper No. 18 : SC3304T**

Unit - 1:- SOIL CONSERVATION **15 L**

Defination, importance, scope and components of soil conservation, prerequisites for soil conservation, physiographic, soils vegetative cover, present land use, nature and distribution of rain fall, prediction of peak rainfall, flood, droughts.

Soil erosion - Extent of soil erosion types of erosion - geological, accelerated. Water erosion sheet erosion, rill erosion, gulley erosion, Ravine's erosion, landslides, stream bank erosion. Factors affecting water erosion-rain fall, soil topography, soil surface cover and biotic interference. Losses due to water erosion.

Wind erosion - Mechanism of wind erosion-saltation, suspension, surface creep, factors affecting wind erosion-soil cloudiness, surface roughness, water stable aggregates and surface crust.

Unit - 2:- Soil conservation Measures **07 L**

Water erosion controls, maintenance of soil infiltration capacity, soil protection from rainfall, control of surface runoff & safe disposal of runoff.

Unit - 3:- Agronomic Measures **07 L**

Choice of crops, land preparation, contour cultivation, strip cropping, mulching & organic manures and fertilizers, copping system.

Unit - 4:- Mechanical measures **07 L**

Bund/terraces, contour bunding, bench terracing, graded bunding, contour trenching, gulley control, vegetative barriers. Forestr Measures - plantation of perennial tree species, grasses and legumes.

Unit - 5:- Waste Land Management **09L**

Definition of wasteland, causes of wasteland, need for wasteland management

Methods of wasteland management - Establishment of vegetation, selection of plant species, use of fertilizers, improvement of vegetative composition orange pasture.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course: B. Voc. in SWCM **Semester - III** **3 - Credits = 45** Lectures
Paper Title:- Soil and Water Management. **Paper No.19 :** SC3305T

Unit - 1:- Water resources (India, Maharashtra & Marathawada Region) **05L**

Rainfall, river, well, ground water and its utilization.

Unit – 2 :- Soil – Water **12 L**

Plant relationship, soil properties --texture, structure, porosity, density, capillary water, evapo transpiration, field capacity, permanent wilting point, consumptive use, soil water potential, matrix potential, pressure potential, gravitational potential. Volume-mass relationship of soil.

Soil moisture measurement - Gravimetric method, volumetric method, Tentiometer, gypsum block, pressure plate apparatus and Neutron probe.

Crop water requirement - different approaches for scheduling of irrigation, effective rainfall and its different methods of measurement.

Unit – 3 :- Measurement of irrigation water **13L**

Water units, methods - volumetric, velocity-area, water meter, weirs-orifice, 90 'V' notch, rectangular weir and partial flume.

Advance irrigation methods - Drip irrigation - components and their functions. Layout and design, estimation of water requirement, sprinkler irrigation, subsurface irrigation and surge irrigation.

Fustigation :- Advantages and disadvantages, types of fertilizers, different devices-ventury, fertilizer tank, injector pump.

Unit – 4 : Water resource management **08L**

Flood and flood plain management; Water-shed management, water harvesting and artificial recharge to ground water; water pollution and water treatment. Wetland and riparian management; forest management on water resources. Environmental issues: River linking debate.

Unit – 5 :- Drainage **07L**

Advantages, types of drainage-surface drainage, subsurface / pipe drainage, tubewell drainage, biodrainage. Preventive measures - Planning of distribution system on farm water management, maintenance of surface drainage system.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course: B. Voc. in SWCM **Semester - III** **6 - Credits** = 90 Lectures
Paper Title:- Lab Course - I **Paper No. 20:** SC3306P

Syllabus of Practical:-

1. Study of land capability classification.
2. Study of various soil conservation structures.
3. Study of factors influencing wind erosion.
4. Study of wind erosion control measures.
5. Study of methods of estimating runoff.
6. Study of water harvesting techniques.
7. Study of Soil conservation measures for agricultural land.
8. Study of methods of gully control.
9. Data collection; analysis, planning and management of a given watershed; Field visit.
10. Field visit

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course: B. Voc. in SWCM **Semester - III** **6 - Credits = 90** Lectures
Paper Title:- Lab Course - II **Paper No. 21:** SC3307P

Syllabus of Practical:-

1. Scope and importance of Agriculture meteorology.
2. Study of various meteorological observatories.
3. Study of various factors affecting soil erosion.
4. Study of instruments used in computation of environmental factors.
5. Study of components of the hydrologic cycle.
6. Study of Measurement of wind.
7. Study of measurement of evaporation.
8. Study of Measurement of Rainfall
9. Study of analysis of rainfall data.
10. Study of Measurement of soil losses.
11. Application of remote sensing in soil and water conservation
12. Field visit – I
13. Field visit- II

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course : B. Voc. in SWCM **Semester-IV** **4-Credits=60** Lectures
PaperTitle: Business Statistics **PaperNo. 22:** GC401T

Unit-1 Introduction to Statistics: **10 L**

Meaning Definition, Scope and importance of statistics, Limitations to statistics, Primary and secondary data, Methods of collecting primary data Sources of secondary Data. Statistical methods Vs. Experimental Methods.

Unit- 2 Measures of Central Tendency: **15 L**

Introduction, Definition, types of average mean, median mode Computation of above measures in discrete series, Continuous series and cumulative Frequency distribution (less than, More than)

Unit -3: Measures of Dispersion and Skewness: **20 L**

a) **Dispersion**: Introduction Definition, Objectives of Measuring Dispersion, Mean Deviation and Coefficient, Standard Deviation Its Coefficient with Covariance.

b) **Skewness:** Introduction, Definition, Objectives of Skewness, Measures of Skewness. Karl Pearson's Coefficient of skewness.

Unit-4: Correlation: **15 L**

Meaning of Correlation, Definition of Correlation, Types of Correlation, Karl Pearson's Coefficient of Correlation, Computation of Probable Error.

Reference Books:

1. Elementary Statistical Methods: Dr. S.P. Gupta, Sultan Chand & Sons.
2. Fundamentals of Statistics: D.N. Elhance, et.al, Kitab Mahal.
3. Statistics (Theory, Methods & Application): Dr. D.C. Sancheti, V.K. Kapoor, Sultan Chand & Sons.
4. Fundamental of Statistics – Dr. D.N. Elhance
5. Statistical Methods Dr. Sancheti and Kapoor
6. Statistical Methods – Dr. S.P.s Gupta
7. Problems in Statistics – Dr. Y.R. Mahajan

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course : B. Voc. in SWCM **Semester-IV** **4-Credits=60** Lectures
PaperTitle: Industrial Psychology **PaperNo. 23:** GC402T

---

1. Introduction: - Meaning & the Scope of Industrial Psychology, Functions & Activities, Limitations & the Unique aspects of Industrial Psychology. **15 L**

2. Individual Differences in Behavior: - Factor associated with differences in behavior individual versus situational variables, Importance of individual differences in jobs, The Effects of training upon individual differences, the basis of individual differences. **15 L**

3. Leadership: - The need for Leadership, Approaches to studying Leadership, Functions of Leader, Types of Leaders (Behavioral & Contingency Theories of Leadership) **15 L**

4. Motivation: - Concept of Motivation, Motivation Theories (Maslow's Need Hierarchy Theory and Herzberg's Two-Factory Theory, Theory 'X' & Theory 'Y') **15 L**

Books Recommended: -

Industrial Psychology — by M.L. Blums, J.C. Naylor

— by P.K. Ghosh

— by Norman R.F. Maier

Management & Organizations Behaviour— by Paul Hersey & Ken Blanchard

Essentials of Management— by Paul Hersey & Ken Blanchard

Principal and Practice of Management— by L.M. Prasad

Human Behavior at Work— by Kaith Devis

Organizational Behavior— by Robbins

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course : B. Voc. in SWCM **Semester-IV** **4-Credits=60** Lectures
PaperTitle: E - Commerce **PaperNo. 24:** GC403T

Unit-I **15 L**

Introduction, IT and business, E-commerce: Concepts, Benefits of E-Commerce; Types of E-Commerce, Advantages and Disadvantage of E-commerce, Electronic Communication, PCs and Networking, E-mail, Internet and intranets. EDI to E-commerce, EDI, UN/EDIFACT.

Unit-II **15L**

Concerns for E-commerce Growth, Internet bandwidth, Technical issues, Security issues, Legal issues. Roadmap of e-commerce in India.

Security Technologies: Encryption, Symmetric key Encryption, Public key encryption, Public key encryption using digital Signatures. Hashing techniques, Certification and key Distribution.

Unit-III **15 L**

The elements of E-commerce. SSL-Secure Socket Layer, SET-Secure Electronic Transaction Protocol for Credit card payment, E-Cash, ECheque, Smart cards. Electronic Payment System: Digital Cash, Digital Wallets, Digital checking payment systems, Electronic Billing, Credit Card Based Electronic Payment Systems, Risks regarding Electronic Payment Systems.

Unit- IV **15 L**

E-Marketing: The scope of E-Marketing, Internet Marketing Techniques, Online Marketing; Advantages of Online Marketing.

Textbook:

1. E-Commerce: The Cutting Edge of Business, Kamlesh K. Bajaj & Debjani Nag, Tata McGraw Hill.
2. E- Commerce Strategy , Technologies and Applications, David Whiteley, McGraw Hill Edition

Reference Books:

1. E- Security, Electronic Authentication and Information Systems Security Sundeep Oberoi, TMG
2. E-Commerce Concepts, Models , Strategies by - G.S.V Murthy.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course: B. Voc. in SWCM **Semester - IV** **3 - Credits = 45** Lectures
Paper Title:- Soil and Water Conservation Techniques. **Paper No. 25:** SC3404T

Unit - 1:- Water harvesting structure **09 L**

Temporary – single row post wood dam, double row post wood dam.

Semi permanent- netting dam, loose boulder structure, Gabien structure.

Permanent structure- check dam.

Unit - 2:- Water conveyance techniques **06L**

Grassed waterways, its design. Soil movement method- siltation, surface creep.

Unit - 3:- Planting techniques in drip irrigation **15 L**

Paired row planting, skip row planting, triangular planting, crops - sugarcane, cotton, banana, bringal, tomato and chilly.

Use of saline water through drip - classification of saline water, salt distribution pattern, conjuctive use of irrigation water, salt tolerant crops, effect of saline water on soil.

Rain water management - land treatment, land leveling and smoothening, bunding, tillage, mulching, fallowing, contour cultivation, inter terrace management practices.

a) Flat on grade b) Flat on grade and later forming ridges with inter cultivation.

c) Narrow ridge and furrow system. d) Graded border strips e) broad bed furrows

f) Dead furrows g) compartment bunding

Inter cultivation and runoff farming; inter plot water harvesting, and water harvesting in farm ponds.

Unit - 4:- Watershed Development and Management **15 L**

Concept of watershed development and management; collection of hydrological data; watershed characteristics and hydrologic cycle; problems of land degradation;

Land use capability classification and topographical characteristics of watershed;

Appropriate soil and water conservation measures for agricultural and non-agricultural lands; Grassland development and management; Techniques for dry land farming based on watershed characteristics; water harvesting techniques for hilly and arid regions;

Hydrological and sediment monitoring of watershed; Estimation of peak design runoff rate; Planning, management and economic evaluation of watershed development projects; case studies.

PRINCIPAL
S.B.E.S College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course: B. Voc. in SWCM **Semester - IV** **3 - Credits = 45** Lectures
Paper Title:- Soil and Water Pollution & Act. **Paper No.26 :** SC3405T

Unit - 1:- Soil Pollution **10 L**

Introduction , Soil pollution by agricultural practices, Soil pollution by biological agents, Soil pollution by soil sediments, Detrimental effect of soil pollution, effect of radioactive pollution, effect of modern technology, Ecological farming system, organic farming, advantages of organic farming, Biotechnology, Land use system.

Unit - 2:- Environmental problems related to soils in India **05 L**

Desertification, salinization, erosion. Bioremediation of contaminated soils and ground water, Fate of plant allelochemicals in soil, Composting, a value addition to our wastes.

Unit - 3:- Water Pollution **10 L**

Water pollution, Definition of water pollution, Water pollutants, Type of water pollution, Sources of water pollution, Physical pollution of water, Chemical pollution of water, Biological pollution of water, Ground water pollution, pesticides pollution, sources of pesticidal pollutants in water, Degradation and mobility of pesticides, Farm waste, Fertilizers, Agricultural discharges.

Unit – 4 :- Prevention and control of Water Pollution **05 L**

Prevention of water pollution, Control of water pollution, How to make best use of water.

Unit – 5 :- Analytical Instrument **15 L**

Theory, Principal, working of application of following instrument – pH meter, Electrical Conductivity meter, Spectrophotometer, Atomic Absorption Spectrophotometer, Flame photometer, Nephlometer, Gas Chromatography etc.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course: B. Voc. in SWCM **Semester - IV** **6 - Credits = 90** Lectures
Paper Title:- Lab Course - I **Paper No.27:** SC3406P

Syllabus of Practical:-

1. Measurement of soil-moisture by Tensiometer / Gypsum block / Neutron probe.
2. Measurement of soil - moisture by pressure plate apparatus / Time Domine Reflectometer (Microwave method).
3. Estimation of net irrigation requirement & gross irrigation requirement.
4. Estimation of irrigation efficiencies.
5. Determination crop water requirement in drip irrigation / spinkler irrigation.
6. Determination of boron from Soil & water.
7. Determination of Zinc from Soil & water.
8. Determination of Iron from Soil & water.
9. Determination of Copper from Soil & water.
10. Determination of Molybdenum from Soil & water.
11. Determination of Manganese from Soil & water.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.
PRINCIPAL

B.Voc. Soil and Water Conservation & Management

Course: B. Voc. in SWCM **Semester - IV** **6 - Credits = 90** Lectures
Paper Title:- Lab Course - II **Paper No.28 :** SC3407P

Syllabus of Practical:-

1. Determination of pH by using pH Meter from waste water.
2. Determination of EC by using EC Meter from waste water
3. Determination of Suspended Solids from waste water.
4. Determination of Dissolved Solids from waste water.
5. Determination of Chloride
6. Determination of Sulphtes.
7. Determination of Dissolved Oxygen.
8. Determination of Biochemical Oxygen Demand.
9. Determination of Chemical Oxygen Demand.
10. Determination of Oil & Grease.
11. Determination of Ammonia
12. Determination of Nitrates.
13. In plant Training.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Third Year

(Soil and Water Conservation & Management)

Semester - V and VI

Course : B. Voc. in SWCM **Semester-V** **4-Credits=60** Lectures
PaperTitle: Campus to Corporate **PaperNo. 29:** GC501T

Unit-I **20 L**

Business Etiquettes,

Etiquette Starts on the Phone, No Solicitation

Personal and Mass Emailing,

Unit-II **20 L**

Confidentiality and the Use of Company Funds and Equipment, Employee Theft – Though Shalt Not Steal, Dressing for work

Unit-III **20 L**

Nepotism in the Workplace, Disturbances, Insensitivity and Discrimination, Office Bullying, Entertaining Customer

References

Office Etiquette: The Unspoken Rules in the Workplace by Sonja L. Traxler

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course : B. Voc. in SWCM **Semester-V** **4-Credits=60** Lectures
PaperTitle: Entrepreneurship Development **PaperNo. 30:** GC502T

Unit I : Entrepreneurial Development Perspective **15 L**

2. Evolution of the concept of Entrepreneur, Concepts of Entrepreneurship Development, Entrepreneur Vs. Entrepreneur, Entrepreneur Vs. Entrepreneurship, Entrepreneur Vs. Manager, Attributes and Characteristics of a successful Entrepreneur, Role of Entrepreneur in development of Indian economy

Unit II Business organizations: - Meaning, types of business organization – Sole proprietorship, Partnership, Co-operative Society, Joint-Stock Company, Selection of an appropriate form of business organization. **15 L**

Unit III Creating Entrepreneurial Venture. Business Planning Process. Environmental Analysis - Search and Scanning Identifying problems and opportunities, Defining Business Idea. **15 L**

Unit IV : Project Identification & Report :- **15 L**

– concept of project - project identification – formulation –appraisal-selection implementation and management–preparation of project report

REFERENCE BOOKS

1) Vasant Desai : "The Dynamics of Entrepreneurial Development and Management, Himalaya Publishing House, Mumbai, Sixth Edition, 2010.

2) Khanka S. S., "Entrepreneurial Development", Chand and Company Ltd, New Delhi, Third Revised Edition, 2001.

3) Pref. E. Gordon & K. Natarajan, "Entrepreneurship Development"

4) N.P. Singh, "Entrepreneurship Development", - Theories & Practices.

5) M. Gangadhar Rao, "Entrepreneurship & Entertainment Development

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester-V** **4-Credits=60** Lectures
PaperTitle: Business Economics **PaperNo. 31:** GC503T

---

1) **Introduction:-** Meaning, Nature and Scope of Business Economics, Micro and Macro economics, its features and Importance. **10 L**

2) **Demand Analysis:-**Introduction, Concept of Demand, individual Demand market Demand, Factors affecting on Demand Types of Demand, Law of Demand, **15 L**

3) **Elasticity of Demand:-** Introduction, Concept ,types of elasticity of demand ,types of Price elasticity of Demand, factors Determining Elasticity of Demand, significance of Price Elasticity of Demand. **15 L**

4) **Producers Behavior :-** Introduction Concepts of Total Output, Stock and supply, Supply schedule, Determinants of market supply Law of supply, change in supply, Variation in supply, Concept of Elasticity of Supply and Types of Elasticity of Supply Measurement Determinants of Elasticity of Supply. Concepts of Cost, Total cost, Average cost and Marginal Cost. **20 L**

Recommended Books :

1. Managerial Economics - Analysis, Problems and Cases, P. L. Mehta, Sultan Chand and Sons, New Delhi.
2. Managerial Economics - Varshney and Maheshwari, Sultan Chand and Sons, New Delhi.
3. Managerial Economics - D. Salvatore, McGraw Hill, New Delhi.
4. Managerial Economics - Peterson and Lewis, Prentice Hall, New Delhi
5. Managerial Economics - G. S. Gupta , T M H, New Delhi.
6. Managerial Economics - Mote, Paul and Gupta, T M H, New Delhi.
7. Managerial Economics — D. C. Hague, Longmans.
8. Managerial Economics - Joel Dean, Prentice Hall, USA.
9. Managerial Economics - H L Ahuja, S Chand & Co. New Delhi.
10. A study of Managerial Economics – D.Gopalkrishna
11. Managerial Economics – D.C.Hauge
12. Managerial Economics – Reckie and Crooke
13. Managerial Economics, 4th Ed. – Craig Peterson

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course: B. Voc. in SWCM **Semester - V** **3 - Credits = 45** Lectures
Paper Title:- Farm Irrigation Systems **Paper No.32 :** SC3504T

Units:- 1

Design of farm irrigation systems- objectives, principles 04 L

Underground pipe line system - objectives, Survey and design and layout. 06 L

Units:- 2

Land grading – importance, advantages and disadvantages of grading. 05 L

Irrigation channels -Water conveyance and water distribution channels 05 L

Units:- 3

Border Irrigation – design, layout, measurement of advance and recession in border irrigation and estimation of irrigation water. 06 L

Furrow irrigation – design, layout, types, measurement of advance and recession in furrow irrigation and estimation of irrigation water. 05 L

Units:- 4

Irrigation efficiency- definition, water conveyance efficiency, application efficiency, storage efficiency, distribution efficiency, water use efficiency, factors affecting irrigation efficiencies, remedial measures to improve irrigation efficiencies. 09 L

Units:- 5

Field problems - and remedial measures for sprinkler and drip irrigation method 05 L

Components of On-farm Development - Field Channel (capacity of field channel, equalizers, layout, lining, drops and chute) ;

Land Shaping - Irrigation Methods Water Management.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course: B. Voc. in SWCM **Semester - V** **3 - Credits = 45** Lectures
Paper Title:- Wells, Pumps & Drainage Engineering. **Paper No. 33:** SC3505T

Units:- 1

Construction of wells. Radius of influence of wells. 5L
Water yield of wells. Well characteristics. Elements of well design.
Advantages and disadvantages of well irrigation.
Discharge limitations of wells. Well casing. Gravel packing.
Well development. Farm ponds.

Units:- 2

Pumps: Water lifting devices. Classification – human powered devices- 6L
archemedian scew, chain pump, etc.
Animal powered devices, mechanically powered devices, positive
displacement pumps. Rotodynamic pumps.

Units:- 3

Centrifugal pumps- classification. Total head in a centrifugal pump 5L
installation.Net positive suction head. Power requirement of pumping.
Selection of centrifugal pumps. Installation of centrifugal pumps. 5L
Common troubles of centrifugal pumps installation.
Turbine pumps: selection of turbine pumps 3L
Submersible pumps. Propeller pumps. Air lift pumps.
Tube well and pump efficiencies. 3L
Electrical connections. 2L

Units:- 4

Drainage- objectives of drainage, familiarization with the drainage problems of 2L
the state, causes of water logging. Effects of bad drainage on crop.

Types of Drainage-

Surface drainage- drainage coefficient, types of surface drainage, design of 3L
open channel,
Sub-Surface Drainage - purpose and benefits, investigations of design 3L
parameters, hydraulic conductivity, drainable porosity, water table etc., drainage
criteria, types and use of subsurface drainage system,

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Units:- 5

Design of surface drains,- interceptor and relief drains. Derivation of ellipse (Hooghoudt's) and Ernst's drain spacing equations. Steady and unsteady state groundwater condition, dynamic equilibrium concept, 2L

Design of subsurface drainage system. - Drainage materials, drainage pipes, drain envelope. Layout, construction and installation of drains. 2L

Drainage structures- Vertical drainage. Bio-drainage. Tile Drains. Drainage of irrigated and humid areas. 2L

Soil problems and reclamation- Salt balance, reclamation of saline and alkaline soils. Leaching requirements, conjunctive use of fresh and saline waters. 2L

Reference books

1. Land and water management Engineering by V.V.N. Murthy and Madan K. Jha.
2. Ground water hydrology by H.M Raghunath
3. Irrigation Engineering Theory and practice by A. M. Michel
4. Watershed hydrology, by R Suresh
5. Soil and water conservation by R Suresh
6. Manual of soil and water conservation Engineering by Gurmel Singh
7. Ground water hydrology by H.M Raghunath

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course: B. Voc. in SWCM **Semester - V** **6 - Credits = 90** Lectures
Paper Title:- Lab Course - I **Paper No. 34:** SC3506P

1. Point to be consider while design of irrigation systems.
2. Study of different methods of surface irrigation.
3. Design, layout and evaluation of furrow irrigation system.
4. Design, layout and evaluation of border irrigation system.
5. Measurement of advance and recession in furrow irrigation.
6. Measurement of advance and recession in border irrigation.
7. Study of components of drip irrigation system.
8. Study of components of sprinkler irrigation system.
9. Study of field problems and remedial measures for sprinkler and drip irrigation system.
10. Study of fertigation technique.
11. Estimation of irrigation efficiency in furrow & border irrigation methods.
12. Measurement of uniformity coefficient in sprinkler irrigation.
13. Measurement of uniformity coefficient in drip irrigation.
14. Study of basic requirement for land grading.
15. Study of layout of field of fields subdivision based on contour patterns.
16. Design and construction of irrigation field channels.
17. Design of underground pipeline system.
18. Field visit – I
19. Field Visit –II

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course: B. Voc. in SWCM **Semester - V** **6 - Credits = 90** Lectures
Paper Title:- Lab Course - II **Paper No. 35:** SC3507P

1. Selection of site for suitable location of well.
2. Study of different methods of drilling tube wells.
3. Study of Testing of yields of tube wells.
4. Study of Hydraulics of open wells.
5. Study of Classification of water lifting devices
6. Study of classification of Centrifugal pumps
7. Criteria for Selection of centrifugal pumps
8. Points to be considered while Installation of centrifugal pumps
9. Study of troubles in installation of centrifugal pumps
10. Study of classification of pumps
11. Study of electrical connections for pumps
12. Study of cost analysis of surface drainage system
13. Study of cost analysis of subsurface drainage system
14. Determination of size of pipe drains
15. Study of accessories for pipe drainage systems.
16. Design and layout surface drainage system.
17. Design of layout of subsurface drainage system.
18. Study of installation & maintenance of subsurface drainage.
19. Field visit –I
20. Field visit – II

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course : B. Voc. in SWCM Semester-VI **4-Credits=60** Lectures
PaperTitle: Research Methodology **PaperNo. 36:** GC601T

Unit- I 20L

Concept of Research – objectives, Motivation, Importance & types of research

Scientific method – Steps involved in a process of research.

Experimental method- Definition, characteristic, and steps involved, difficulties in experimental method, advantages & limitations.

Unit-II 20L

Research Problem

Meaning of research problems, sources of research problems criteria/ characteristics of a good research problems, errors in research problems.

Hypothesis formation

Unit-III 20L

Sources of data – Primary data – advantages & disadvantages –sources of primary dada, Secondary data – advantages & disadvantages- sources of secondary data. Observation – meaning & characteristics, types , advantages & disadvantages

Information Technology And Library Resources

The internet and world wide web, internet resources for chemistry, using spreadsheets, word processors, databases and other packages, finding and citing information

Unit –IV :- Communicating Information 20L

General aspects of scientific writhing, writing essays, reporting practical and project work, writing literature surveys and reviews, organizing a poster display, giving an oral presentation examinations

Reference Books:-

Research Methodology, Methods & Techniques by C.R. Kothari.

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

B.Voc. Soil and Water Conservation & Management

Course : B. Voc. in SWCM Semester-VI **4-Credits=60** Lectures
PaperTitle: Human Resource Management **PaperNo. 37:** GC602T

Unit I - Introduction to Human Resource Management - Concept, Nature, Scope, Significance, Objectives and Functions of HRM. **15 L**

Unit II – Human Resource Planning (HRP) - Meaning and need for Human resource Planning - Process of HRP - Factors affecting HRP. –Job Analysis -Recruitment and selection – Meaning, - Sources of recruitment **15 L**

Unit III - Employee Training - Meaning and need for training - Steps in training - Methods of Training – Impediments of effective training **15 L**

Unit IV - Performance Appraisal and Merit Rating - Meaning and purpose of performance appraisal - Methods of performance appraisal - Ethics in performance appraisal – Merit Rating – Meaning, Benefits of Merit Rating – Difference between performance appraisal and merit rating

15 L

Books Recommended: -

Principles of Personnel Management — by Edwin B Phlipo

Management of Organization Behaviour — by Paul Harsey K. Blanchard

Personnel/Human Resource Management __ Decenza & David

Human Resource Management- P.Subbarao

Human Resource Management: R.S.Triwedi

Human Resource Management — by C.V. Subramaniam

K Ashwathappa : Human Resource Management, Tata McGraw Hill, New Delhi

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.

Course : B. Voc. in SWCM **Semester-VI** **4-Credits=60** Lectures
PaperTitle: Principles of Marketing **PaperNo. 38:** GC603T

---

1. Marketing Concepts – Approaches to Marketing –Core concepts of marketing - Marketing Process – Functions of Marketing **15 L**

2. Marketing Environment– The changing marketing environment – Analyzing, needs and trends in Macro Environment and Micro Environment **15 L**

3. Market Segmentation – Bases for market segmentation of consumer goods, industrial goods and services – Market Targeting and positioning strategies Marketing Mix – Four P's – Its significance in the competitive environment **15 L**

4. New Product Decision Process – Types of new products Product and Product Line – Product Mix – Product Life Cycle – Managing the product in Product Life Cycle, Test Marketing of a new product, Packaging – Purpose, Types and New Trends in packaging . **15 L**

Reference Books Recommended

1. Marketing Special Indian Edition- Dhruv Grewal, Michael Levy

2. Marketing - Stanton,,Michael Etzel,Walker(Tata)

3. Marketing Management - V.S.Ramaswamy and S.Namakumari

4. Principles of Marketing 9th Edition - Philip Kotler and Gary Armstrong

5. Marketing - Bovee and John Thill

6. Marketing Models - Lilien & Kotler & Moorthy

7. Case Studies in Marketing – Indian context - R.Srinivas

8. Marketing Management Text And Cases in Indian Context-Dr.K.Karunakaran

9. Marketing Management Text and Cases-Biplab Bose

10. Marketing Management -S.A. Sherlekar13th Edition

11. Product Management S.A.Chunawala

12. Marketing Management - Philip Kotler

Course: B. Voc. in SWCM **Semester - VI** **6 - Credits**
Paper Title:- Seminar I, II, III. **Paper No. 39:** SC3604T

Seminar based on Paper SC3504 & Paper SC3505
Inplant Training

Course: B. Voc. in SWCM **Semester - VI** **12 - Credits**
Paper Title:- Project / Dissertation. **Paper No. 40:** SC3605P

Dissertation based on Field training / Inplant training

PRINCIPAL
S.B.E.S. College of Science
Aurangabad.