



Nanded Education Society's

# Science College, Nanded

Tel: 02462-250 465, 251 648

[www.sciencecollegenanded.org](http://www.sciencecollegenanded.org)

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)

(Reaccredited with "A" grade by NAAC with (CGPA 3.38)

3rd Cycle, CPE Status, DST-FIST, Best College Award (SRTMUN)

## SELF STUDY REPORT

FOR

IV CYCLE OF REACCREDITATION



## Criteria- I

### Curricular Aspects

(Key Indicator- 1.2 Academic Flexibility)

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

**1.2.1.1 Institutional programme  
brochure/notice for Certificate/Value  
added programs with course modules  
and outcomes**

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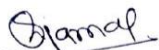
**List of Certificate/ Value Added /Bridge/ Diploma Courses**

Academic Year	Title of Certificate/Value added/Bridge Courses Diploma	Department	Course Co-ordinator	No. of students enrolled		Duration
2019-20	Certificate Course in Basics of Electronics	Department of Physics and Electronics	Mr. S. R. Dulewad	13	10	1 Months
2019-20	Certificate Course in Biofertilizer Technology	Department Agriculture Microbiology	Dr. Mrs. P. S. Borkar	7	23	1 Months
2019-20	Certificate Course in Laboratory Techniques in Microbiology	Department Agriculture Microbiology	Dr. Mrs. P. S. Borkar	7	23	1 Months
2019-20	Certificate Course in Verbal and Non-Verbal Reasoning	Department of Mathematics and Applied Mathematics	Mr. Prashant Sutkar	11	11	1 Months
2019-20	Certificate Course in Office Automation and Data Analysis	Department of Computer Science	Dr. U. S. Patki	66	45	1 Months
2019-20	Certificate Course in Advance Excel in Data Analysis	Department of Statistics	Mr. H. S. Puyad	3	22	1 Months

2019-20	Handling of Instruments in Chemistry	Department of Chemistry Analytical Chemistry and Agro Chemistry	Dr. L. P. Shinde	59	41	1 Months
2019-20	Preparation of Solutions and Solvent	Department of Chemistry Analytical Chemistry and Agro Chemistry	Dr. L. P. Shinde	59	41	1 Months
2019-20						
2018-19	Certificate Course in Renewable Energy	Department of Physics and Electronics	Dr. Vijaykiran Narwade	10	10	1 Months
2018-19	Certificate Course in Vermicomposting	Department of Zoology	Mr. S. M. Kadam	12	14	1 Months
2018-19	Certificate Course in Sericulture	Department of Zoology	Mr. R. M. Achegawe	7	19	1 Months

  
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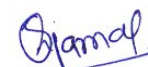
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**List of Certificate/Value added/Bridge Courses Diploma 2018-19**

Sr. No	Academic Year	Title of Certificate/Value added/Bridge Courses Diploma	Department	Course Co-ordinator	Duration
1.	2018-19	Bridge Course on PHP Programming	Department of Computer Science	Dr. Mohseena Thaseena	One Week- 30 Modules
2.	2018-19	Certificate course in "English Communication"	Department of English	Dr. Mrs. V. V. Kulkarni	1 Month

  
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**List of Certificate/Value added/Bridge Courses Diploma 2019-20**

Sr. No	Academic Year	Title of Certificate/Value added/Bridge Courses Diploma	Department	Course Co-ordinator	Duration
1.	2019-20	Certificate Course in Fiber Optics Communication	Department of Physics and Electronics	Mr. A. K. Ghadge	2 Months
2.	2019-20	Certificate Course in "Fresh Water Fish Culture Technology	Department of Fishery Science	Dr. K.S. Shillewar	2 Months
3.	2019-20	One Month Certificate Course in "English Communication"	Department of English	Dr. Mrs. V. V. Kulkarni	1 Month


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**List of Certificate/Value added/Bridge Courses Diploma 2020-21**

<b>Sr. No</b>	<b>Academic Year</b>	<b>Title of Certificate/Value added/Bridge Courses Diploma</b>	<b>Department</b>	<b>Course Co-ordinator</b>	<b>Duration</b>
1.	2020-21	One Month Certificate Course in "English Communication"	Department of English	Dr. Mrs. V. V. Kulkarni	1 Month

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**List of Certificate/Value added/Bridge Courses Diploma 2021-22**

Sr. No.	Academic Year	Title of Certificate/Value added/Bridge Courses Diploma	Department	Course Co-ordinator	Duration
1.	2021-22	Certificate Course in Basics of Electronics	Department of Physics and Electronics	Mr. S. R. Dulewad	2 Months
2.	2021-22	Online Course in Python Programming for Beginners	Department of Computer Science	Dr. S. S. Modi	1 Month
3.	2021-22	Certificate Course in Advanced Python Programming	Department of Computer Science	Dr. S. S. Modi	2 Months
4.	2021-22	Programming in Python Basic to Advance	Department of Computer Science	Dr. S. S. Modi	2 Months
5.	2021-22	Certificate Course in Advance Database Administration Using SQL	Department of Computer Science	Mr. J. U. Duve	3Months
6.	2021-22	Certificate Course in Advance Excel in Data Analysis	Department of Statistics	Mr. H. S. Puyad	3Months
7.	2021-22	Certificate Course in "Hydro Exploration and Water Quality Analysis (CCHEAWQA)	Department of Geology	Dr. P. R. Kulkarni	2 Months
8.	2021-22	Employment Communication Using Language Lab	Department of English	Dr. Mrs. V. V. Kulkarni	1 Month
9.	2021-22	Certificate Course in Patrachar	Department of Hindi	Dr. Mrs. A. R. Shukla	3Months
10.	2021-22	Bio-fertilizer Technology	Department of Botany	Dr. Mrs. P. S. Borkar	3 Months
11.	2021-22	Laboratory Techniques in Microbiology	Department of Botany	Dr. Mrs. P. S. Borkar	1 Month

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**List of Certificate/Value added/Bridge Courses Diploma 2022-23**

Sr. No	Academic Year	Title of Certificate/Value added/Bridge Courses Diploma	Department	Course Co-ordinator	Duration
1.	2022-23	Soil Testing and Nutrient Analysis	Department of Chemistry, Analytical Chemistry and Agro Chemistry	Mr. K. K. Jadhav	2 Months
2.	2022-23	Fresh Water Fish Culture Technology	Department of Fishery Science	Dr. K.S. Shillewar	3 Months
3.	2022-23	Pisciculture	Department of Fishery Science	Dr. K.S. Shillewar	3 Months
4.	2022-23	Certificate Course in Verbal and Non-Verbal Reasoning	Department of Mathematics and Applied Mathematics	Mr. Prashant Sutkar	2 Months
5.	2022-23	Bridge Course in Scientific Writing with LATEX	Department of Mathematics and Applied Mathematics	Mrs. V. D. Borgaonkar	1 Month
6.	2022-23	Certificate Course in Advanced Python Programming (Batch I)	Department of Computer Science	Dr. S. S. Modi	2 Months
7.	2022-23	Certificate Course in Advanced Python Programming (Batch II)	Department of Computer Science	Dr. S. S. Modi	2 Months
8.	2022-23	Certificate Course in SQL	Department of Computer Science	Mr. J. U. Duve	3Months
9.	2022-23	Certificate Course in Office Automation and Data Analysis	Department of Computer Science	Dr. U. S. Patki	3Months
10.	2022-23	Certificate Course in Advance Excel	Department of Statistics	Mr. H. S. Puyad	3Months

  
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		Data Analysis			
11.	2022-23	Certificate Course in "Hydro Exploration and Water Quality Analysis (CCHEAWQA)	Department of Geology	Dr. P. R. Kulkarni	2 Months
12.	2022-23	Employment Communication Using Language Lab	Department of English	Dr. Mrs. V. V. Kulkarni	1 Month
13.	2022-23	Certificate Course in Anuvad: Saidhantik Vivechan	Department of Hindi	Dr. Mrs. A. R. Shukla	3Months
14.	2022-23	Diploma in Sports Nutrition and Physiotherapy	Department of Sports	Dr. A. P. Borikar	1 Year
15.	2022-23	Bio-fertilizer Technology	Department of Botany	Dr. Mrs. P. S. Borkar	
16.	2022-23	Laboratory Techniques in Microbiology	Department of Botany	Dr. Mrs. P. S. Borkar	1 Month
17.	2022-23	Food Adulteration	Department of Chemistry Analytical Chemistry and Agro Chemistry	Dr. L. P. Shinde	2 Months

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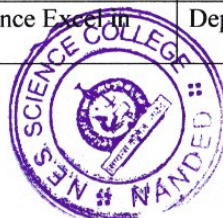


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**List of Certificate/Value added/Bridge Courses Diploma 2023-24**

Sr. No.	Academic Year	Title of Certificate/Value added/Bridge Courses Diploma	Department	Course Co-ordinator	Duration
1.	2023-24	Object Oriented Concept with python Programming	Department of Computer Science	Dr. Mrs. S. S. Modi	2 Months
2.	2023-24	Handling of Instruments in Chemistry	Department of Chemistry Analytical Chemistry and Agro Chemistry	Dr. L. P. Shinde	2 Months
3.	2023-24	Preparation of Solutions and Solvent	Department of Chemistry Analytical Chemistry and Agro Chemistry	Dr. L. P. Shinde	2 Months
4.	2023-24	Certificate Course in Renewable Energy	Department of Physics and Electronics	Dr. Vijaykiran Narwade	2 Months
5.	2023-24	Certificate Course in Vermicomposting	Department of Zoology	Mr. S. M. Kadam	3 Months
6.	2023-24	Certificate Course in Sericulture	Department of Zoology	Mr. R. M. Achegawe	3 Months
7.	2023-24	Certificate Course in Verbal and Non-Verbal Reasoning	Department of Mathematics and Applied Mathematics	Mr. Prashant Sutkar	3 Months
8.	2023-24	Bridge Course in Vedic Mathematics	Department of Mathematics and Applied Mathematics	Mrs. V. D. Borgaonkar	1 Month
9.	2023-24	Certificate Course on Working and Applications of LATEX Software	Department of Mathematics and Applied Mathematics	Dr. P. R. Kulkarni	3 Months
10.	2023-24	Certificate Course in Advance Database Administration Using SQL	Department of Computer Science	Mr. J. U. Duve	3Months
11.	2023-24	Certificate Course in Advance Excel in Data Analysis	Department of Statistics	Mr. H. S. Puyad	3Months

  
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12.	2023-24	Certificate Course in Statistical Analysis of Fertilizers in Agriculture	Department of Statistics	Mr. Bhramanna A. S.	3Months
13.	2023-24	Certificate Course in "Hydro Exploration and Water Quality Analysis (CCHEAWQA)	Department of Geology	Dr. P. R. Kulkarni	2 Months
14.	2023-24	Certificate Course in Certificate Course on Morphometric (Petrographical) Analysis of Minerals and Rocks	Department of Geology	Dr. P. R. Kulkarni	2 Months
15.	2023-24	Language Soft Skills for Science Graduates	Department of English	Dr. Mrs. V. V. Kulkarni	1 Month
16.	2023-24	Certificate Course in Anuvad: Vyavharik Anuprayog Evam Anuvad Karya	Department of Hindi	Dr. Mrs. A. R. Shukla	3Months

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NANDED EDUCATION SOCIETY'S  
**SCIENCE COLLEGE, NANDED**

Associated to State Board of Secondary Education, Maharashtra  
Nanded

**CERTIFICATE COURSE**  
**IN**  
**Translation Examination-I**  
**Anuvad: Saidhantik Vivechan**

**ORGANIZED BY**  
**DEPARTMENT OF HINDI**  
**Science College, Nanded**

**Academic Year 2022-2023**

  
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**V. B. S. Science College, Nanded**

Date: 11/11/22

## Notice

All the students those are enrolled for the two Month Certificate course, "Anuvad saidhantik Vivechan", are here by informed that the course has been start as per schedule. Kindly attend the course regularly. The duration of course is of two months / *Three months / One month.*



Principal

Dr. D.U. Gawai

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प्रश्न-पत्र 1- अनुवाद : सैद्धान्तिक विवेचन कुल अंक- 100

यूनिट 1- (कुल व्याख्यान 15)

श्रेयांक- 1

1. अनुवाद : अर्थ, परिभाषा और स्वरूप
2. अनुवाद : कला, शिल्प अथवा विज्ञान
3. अनुवाद : आवश्यकता, महत्व और उपादेयता

यूनिट 2- (कुल व्याख्यान 15)

श्रेयांक- 1

1. अनुवाद : प्रक्रिया एवं सिद्धान्त
2. अनुवाद : प्रकार - (शाब्दिक अनुवाद, भवानुवाद, छायानुवाद, सारानुवाद, आदर्शानुवाद, पर्यायानुवाद, आशु अनुवाद, साहित्यिक अनुवाद, साहित्यतर अनुवाद, वैज्ञानिक एवं तकनीकी अनुवाद, कम्प्यूटर आधारित अनुवाद)
3. अनुवाद : प्रविधियाँ

यूनिट 3- (कुल व्याख्यान 15)

श्रेयांक- 1

1. अनुवादक की भूमिका, गुण एवं महत्व
2. अनुवाद, समस्याएँ, सीमाएँ एवं चुनौतियाँ (अनुवाद की शब्दगत, अर्थगत समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की भाषागत समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की व्याकरण संबंधी समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की सामाजिक, भौगोलिक एवं सांस्कृतिक समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की महावरा और लोकांतिकियों की समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की साहित्यिक विधाओं की समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की ध्वनिमूलक समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की शैली संबंधी समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की तकनीकी, वैज्ञानिक एवं प्रौद्योगिकी समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की कार्यालयीन विषयों की समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की प्रशासनिक, विधिक एवं वाणिज्य समस्याएँ, सीमाएँ एवं चुनौतियाँ। अनुवाद की विज्ञापन संबंधी समस्या, सीमाएँ एवं चुनौतियाँ।)
3. कम्प्यूटर आधारित अनुवाद (कम्प्यूटर आधारित अनुवाद का इतिहास, प्रक्रिया, सॉफ्टवेयर, कठिनाई एवं समस्याएँ)

यूनिट 4- प्रकल्प हेतु 15 अंकों का व्यावहारिक अनुवाद लेखन कार्य एवं 05 अंककक्षा में उपस्थिति, सक्रिय सहभागिता, अनुशासन आदि के लिए कुल अंक - 20

श्रेयांक- 1



- निर्देश-** 1. उपर्युक्त क्षेत्रों से सम्बद्ध प्रयोगिक अनुवाद (अंग्रेजी/मराठी से हिन्दी में अनुवाद)।
2. प्रकल्प 15 अंकों का, लगभग 15 पृष्ठ, A4 साइज़ (पृष्ठ के एक ओर हस्त लिखित, तथा सात सामाग्री की छायाप्रति संलग्न) पृष्ठों में हो, पाठ्यक्रम की अवधि के दौरान पूर्ण किया जाए तथा प्रकल्प दोनों प्रश्न-पत्र पर समान अंक से लागू है।
3. अनुवाद प्रमाण पत्र पाठ्यक्रम के दौरान शैक्षणिक भ्रमण हेतु अनुवाद संस्थान अनुवाद की शैक्षिक संस्थाएँ, अनुवाद निजी कंपनियों/बैंकिंग क्षेत्र राजभाषा कार्यालय इत्यादि में अनुवाद के व्यावहारिक ज्ञान हेतु न्यूनतम एक भेंट यात्रा वीक्षण मुआयना (विजिट) अनिवार्य है।
4. अनुवाद प्रमाण पत्र पाठ्यक्रम के प्रत्येक प्रश्न पत्र हेतु लिखित परीक्षा की अवधि- 2 घंटे।

### प्रश्न-पत्र प्रारूप

प्रश्न-पत्र 1	अंक
प्रश्न-1. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित)	20
प्रश्न-2. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित)	20
प्रश्न-3. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित)	20
प्रश्न-4. (क) वस्तुनिष्ठ प्रश्न	10
(ख) बहुविकल्पीय प्रश्न	10
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	कुल-80
<b>आंतरिक परीक्षण</b>	
<b>प्रकल्प-</b>	15
रक्षा में उपस्थिति, सक्रिय सहभागिता, अनुशासन आदि-	05
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	कुल- 20
	80-20
<b>कुल योग- पूर्णांक 100</b>	





## प्रस्तावना-

स्नातक स्तर पर अनुवाद का प्रमाण पत्र पाठ्यक्रम भारतीय भाषाओं तथा अंग्रेजी-हिन्दी में अनुवाद की तकनीकी कौशल निर्माण के उद्देश्य को केंद्रित करके तैयार किया गया है। भारत जैसे विशाल बहुभाषिक राष्ट्र के लिए अनुवाद एक महत्वपूर्ण सेतु का कार्य करता है। देश की भाषिक, सांस्कृतिक, साहित्यिक इत्यादि विविधता में एकरूपता के लिए अनुवाद की अनिवार्यता है। इस दृष्टि को केंद्रित रखते हुए साहित्यिक, व्यावसायिक, वाणिज्यिक, शासन, प्रशासन के अनुवादों की आवश्यकता निर्गत बने हैं। इस क्रमों को पूर्ण करने के लिए अनुवाद की अनिवार्यता स्वतः सिद्ध हो जाती है। वर्तमान समय में विभिन्न अंतरराष्ट्रीय ज्ञान का समकित रूप में आदान-प्रदान करने हेतु तथा विविध रोजगार की संभावनाओं को दृष्टि में रखते हुए यह पाठ्यक्रम विद्यार्थियों के लिए लाभदायक सिद्ध होगा।

## उद्देश्य-

1. भारत के बहुभाषिक परिवेश में भाषिक कौशल निर्माण द्वारा अंतरराष्ट्रीय ज्ञान को समृद्ध करना।
2. वर्तमान भूमंडलीकरण के परिदृश्य में अनुवाद की उपयोगिता और महत्त्व को समझते हुए उसकी आवश्यकता की प्रतिपूर्ति करना।
3. अनुवाद प्रक्रिया, प्रविधि से परिचित कराते हुए विद्यार्थियों को अनुवाद तकनीकी कौशल का निर्माण करना।
4. अनुवाद के विभिन्न अधुनातन क्षेत्रों में उपलब्ध रोजगार के योग्य कौशल निर्माण करना।
5. अनुवाद के माध्यम से भाषा, साहित्य, वाणिज्य, व्यापार, शासन, प्रशासन के क्षेत्र में पुस्तकों, दस्तावेजों के अनुवाद को समृद्ध करने का प्रयास करना तथा विद्यार्थियों को प्रवीण करना।

## अनुवाद प्रमाण पत्र पाठ्यक्रम - प्रारूप

प्रश्न पत्र 1: अनुवाद सैद्धांतिक विवेचन (कुल अंक 100)

अवधि: तीन माह (Duration: 3 months)

व्याख्यान: प्रत्येक प्रश्न पत्र हेतु 60 lectures

लिखित परीक्षा अवधि: 3 घंटे

प्रश्न पत्र क्रेडिट 4

पाठ्यक्रम शुल्क: निशुल्क





**NANDED EDUCATION SOCIETY'S  
SCIENCE COLLEGE, NANDED**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**CERTIFICATE COURSE**

**IN**

**Translation Examination-II**

**Anuvad: Vyavharik Anuprayog Evam**

**Anuvad karya**

**ORGANIZED BY**

**DEPARTMENT OF HINDI**

**Science College, Nanded**

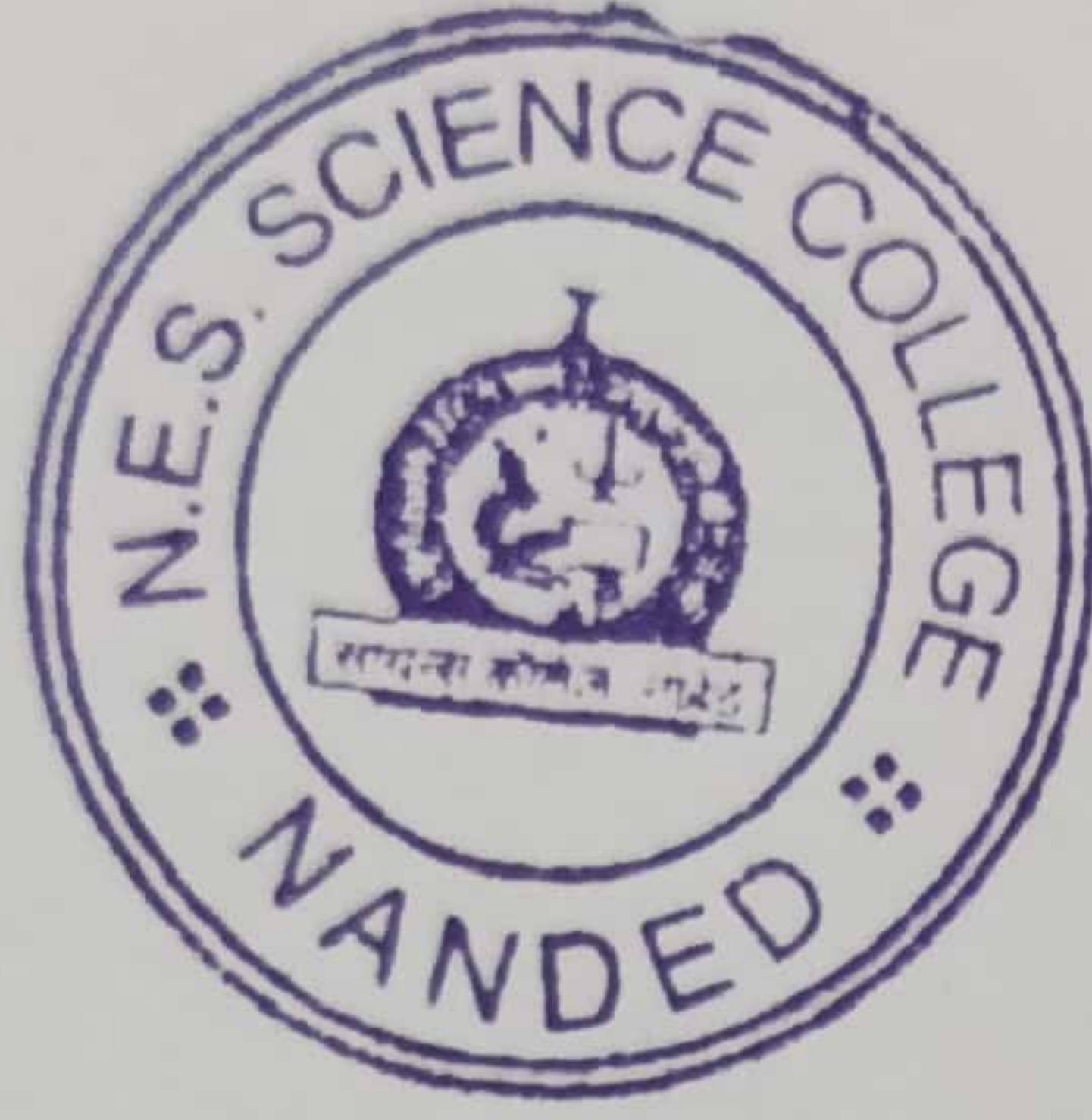
**Academic Year 2023-2024**

*[Signature]*  
**PRINCIPAL**  
S. Science College, Nanded

# Notice

Date: 03/07/23

All the students those are enrolled for the two Month Certificate course, "Anuvad Vyavharik Anuprayog Evam Anuvad Karya", are here by informed that the course has been start as per schedule. Kindly attend the course regularly. The duration of course is of two months. / Three months / one months.



Principal

Dr. D.U. Gawai  
**PRINCIPAL**  
Science College, Nanded

## प्रस्तावना-

स्नातक स्तर पर अनुवाद का प्रमाण पत्र पाठ्यक्रम भारतीय भाषाओं तथा अंग्रेजी-हिन्दी से अनुवाद की तकनीकी कौशल निर्माण के उद्देश्य को केंद्रित करके तैयार किया गया है। भारत जैसे विशाल बहुभाषिक गण्ट के लिए अनुवाद एक महत्वपूर्ण सेतु का कार्य करता है। देश की भाषिक, सांस्कृतिक, साहित्यिक इत्यादि विविधता में एकरूपता के लिए अनुवाद की अनिवार्यता है। इस दृष्टि को केंद्रित रखते हुए साहित्यिक, व्यावसायिक, वाणिज्यिक, शासन, प्रशासन के अनुवादों की आवश्यकता निरंतर बनी हुई है। इस कमी को पूर्ण कराने के लिए अनुवाद की अनिवार्यता स्वतः सिद्ध हो जाती है। वर्तमान समय में विभिन्न अंतरानुशासनिक ज्ञान का समेकित रूप में आदान-प्रदान कराने हेतु तथा विविध रोजगार की संभावनाओं को दृष्टि में रखते हुए यह पाठ्यक्रम विद्यार्थियों के लिए लाभदायक सिद्ध होगा।

## उद्देश्य-

1. भारत के बहुभाषिक परिवेश में भाषिक कौशल निर्माण द्वारा अंतरानुशासनिक ज्ञान को समृद्ध कराना।
2. वर्तमान भूमंडलीकरण के परिदृश्य में अनुवाद की उपयोगिता और महत्त्व को समझते हुए उसकी आवश्यकता की प्रतिपूर्ति कराना।
3. अनुवाद प्रक्रिया, प्रविधि से परिचित कराते हुए विद्यार्थियों को अनुवाद तकनीकी कौशल का निर्माण कराना।
4. अनुवाद के विभिन्न अधुनातन क्षेत्रों में उपलब्ध रोजगार के योग्य कौशल निर्माण कराना।
5. अनुवाद के माध्यम से भाषा, साहित्य, वाणिज्य, व्यापार, शासन, प्रशासन के क्षेत्र में पुस्तकों, दस्तावेजों के अनुवाद को समृद्ध करने का प्रयास कराना तथा विद्यार्थियों को प्रवीण कराना।



प्रश्न-पत्र 2- अनुवाद : व्यावहारिक अनुप्रयोग एवं अनुवाद कार्य कुल अंक- 100

यूनिट 1- (कुल व्याख्यान 15)

श्रेयांक- 1

1. प्रशासनिक अनुवाद- प्रशासनिक अनुवाद की आवश्यकता, पत्रों की भाषा, प्रमुख वाक्यांश(शब्दावली एवं वाक्यांश,पत्राचारों के विभिन्न रूप और उनका अनुवाद- सूचना, परिपत्र, आदेश, टिप्पण, पत्र तथा पृष्ठांकन आदि का व्यावहारिक अनुवाद एवं अभ्यास)
2. अनुवाद : हिन्दी भाषा, मानकीकरण

यूनिट 2- (कुल व्याख्यान 15)

श्रेयांक- 1

1. प्रूफशोधन प्रक्रिया, उपयोगिता एवं व्यवहार
2. डबिंग अर्थ, प्रारूप एवं क्षेत्र

यूनिट 3- (कुल व्याख्यान 15)

श्रेयांक- 1

1. कार्यविधि साहित्य का अनुवाद (मैन्युअल तथा रिपोर्टों का अनुवाद, विधिक प्रकृति के कागजात का अनुवाद, राजनायिक पत्रों एवं प्रलेखों का अनुवाद, अंतरराष्ट्रीय संधियों-समझौतों का अनुवाद)
2. व्यावसायिक, तकनीकी, वैज्ञानिक, वाणिज्य क्षेत्र में अनुवाद (रेलवे, बीमा, आयात-निर्यात विभाग, बैंक प्रयुक्त पारिभाषिक शब्दावली/वाक्यांशों का परिचय, व्यावहारिक अनुवाद तथा फिल्म पटकथा एवं संवाद, धारावाहिक, कार्टून फिल्मका परिचय और व्यावहारिक अनुवाद)

यूनिट 4- प्रकल्प हेतु 15 अंकों का व्यावहारिक अनुवाद लेखन कार्य एवं 05 अंककक्षा में उपस्थिति,

सक्रिय सहभागिता, अनुशासन आदि के लिए कुल अंक -20

श्रेयांक- 1



- निर्देश.** 1. उपर्युक्त क्षेत्रों से सम्बद्ध प्रयोगिक अनुवाद (अंग्रेजी/मराठी से हिन्दी में अनुवाद)।
2. प्रकल्प 15 अंकों का, लगभग 15 पृष्ठ, A4 साइज (पृष्ठ के एक ओर हस्त लिखित, तथा बाँत मापों की छायाचित्र संलग्न) पृष्ठों में हो, पाठ्यक्रम की अवधि के दौरान पूर्ण किया जाए तथा प्रकल्प दोनों पत्र पर समान अंक से लागू हो।
3. अनुवाद प्रमाण पत्र पाठ्यक्रम के दौरान शैक्षणिक भ्रमण हेतु अनुवाद संस्थान/अनुवाद की शैक्षिक संस्थाएँ/अनुवाद निजी कंपनियाँ/बैंकिंग क्षेत्र/राजभाषा कार्यालय इत्यादि में अनुवाद के व्यावहारिक ज्ञान हेतु न्यूनतम एक भेंट यात्रा/वीक्षण/सुआयना (विजिट) अनिवार्य है।
4. अनुवाद प्रमाण पत्र पाठ्यक्रम के प्रत्येक प्रश्न पत्र हेतु लिखित परीक्षा की अवधि 2 ½ घंटे।

### प्रश्न-पत्र प्रारूप

प्रश्न-पत्र ।	अंक
प्रश्न-1. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित)	20
प्रश्न-2. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित)	20
प्रश्न-3. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित)	20
प्रश्न-4. (क) वस्तुनिष्ठ प्रश्न	10
(ख) बहुविकल्पीय प्रश्न	10
	—
	कुल-80
<b>आंतरिक परीक्षण</b>	
<b>प्रकल्प-</b>	15
कक्षा में उपस्थिति, सक्रिय सहभागिता, अनुशासन आदि-	05
	—
	कुल- 20
	80+20

**कुल योग- पूर्णांक 100**



प्रश्न-पत्र	अंक
प्रश्न-1. प्रश्न (आंतरिक विकल्प सहित)	20
प्रश्न-2. प्रश्न (आंतरिक विकल्प सहित)	20
प्रश्न-3. उपर्युक्त सभी क्षेत्रों के परिच्छेदों का अनुवाद (अंग्रेजी/मराठी से हिन्दी में अनुवाद)।	20
प्रश्न-4. सम्पूर्ण इकाई से (क) विकल्प सहित पत्र का अनुवाद (ख) प्रचलित पारिभाषिक शब्दावली, वाक्यांशों, मुहावरों, कहावतों का अनुवाद	10
	—
	कुल- 80
<b>आंतरिक परीक्षण</b>	
<b>प्रकल्प-</b>	15
कक्षा में उपस्थिति, सक्रिय सहभागिता, अनुशासन आदि-	05
	—
	कुल- 20
	80+20
<b>कुल योग- पूर्णांक 100</b>	

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#### **ऑनलाइन शब्दकोश**

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NANDED EDUCATION SOCIETY'S

## SCIENCE COLLEGE, NANDED

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded )

(NAAC Re - accredited "A" grade CGPA 3.38, Recipient of DST - FIST, CPE Status)

(Bast College Award)

**CERTIFICATE COURSE**

**IN**


**PATRACHAR**

ORGANISED BY

**DEPARTMENT OF HINDI**

**SCIENCE COLLEGE, NANDED**

ACADEMIC YEAR 2021 - 2022

  
PRINCIPAL  
N. E. S. Science College, Nanded

# Notice

Date: 10/02/2021

All the students those are enrolled for the two Month Certificate course, "Patrachar", are here by informed that the course has been start as per schedule. Kindly attend the course regularly. The duration of course is of two months/*Three months/one months*.



Principal

Dr. D.U. Gawai

**PRINCIPAL**

**Science College, Nanded**

## प्रस्तावना -

स्नातक स्तर पर पत्राचार का प्रमाण पत्र पाठ्यक्रम कौशल निर्माण के उद्देश्य को केंद्रित करके तैयार किया गया है। भारत जैसे विशाल राष्ट्र के लिए पत्राचार महत्वपूर्ण पाठ्यक्रम है। वर्तमान समय में विविध रोजगार की संभावनाओं को दृष्टि में रखते हुए यह पत्राचार पाठ्यक्रम विद्यार्थियों के लिए लाभदायक सिद्ध होगा। कई महाविद्यालय विश्वविद्यालय पत्राचार पाठ्यक्रम प्रदान करते हैं जो छात्रों को नए कौशल सीखने या क्रेडिट अर्जित करने का मौका देते हैं पत्राचार पाठ्यक्रम आपके करियर में मदद करने की क्षमता रखते हैं।

इस इकाई में हम पत्राचार के बारे में अध्ययन करने जा रहे हैं। पत्राचार और अन्य विविध पत्राचार का अंतर इस इकाई में स्पष्ट किया जाएगा। विभिन्न अवधारणा के माध्यम से पत्राचार के स्वरूप उनके विभिन्न प्रकारों की भी चर्चा की जाएगी। इस पाठ्यक्रम में हमने यह प्रयास किया है कि पत्राचार के विभिन्न रूपों से आपको परिचित कारण ताकि आप सभी हिंदी में पत्राचार करना सीख सकें। पत्राचार विभिन्न प्रकार के होते हैं, विभिन्न स्थिति और संदर्भ में उनका स्वरूप तय होता है। पत्राचार का अर्थ और आवश्यकता तथा प्रारूप गति विशेषताएं बताई गई हैं। विभिन्न पात्रों के नमूने तथा भाषा शैली से भी अवगत कराया जाएगा। पत्राचार के रूप इनकी भाषिक संरचना किस प्रकार की होती है इसको भी स्पष्ट किया गया है।



## उद्देश्य -

- यह संचार का माध्यम है।
- एक दूसरे को पत्र लिखना पत्राचार कहलाता है।
- एक से दूसरे व्यक्ति की भावनाओं से जुड़ने का माध्यम पत्राचार है।
- विभिन्न पत्राचार के माध्यम से ज्ञान में समृद्धि करना।
- पत्राचार के उपयोगिता और महत्व को समझते हुए उसकी आवश्यकता की प्रतिपूर्ति करना।
- विद्यार्थियों में पत्राचार कौशल निर्माण करना।
- पत्राचार के माध्यम से भाषा, साहित्य, वाणिज्य, व्यापार, शासन, प्रशासन के क्षेत्रों में पत्राचार को समृद्ध करने का प्रयास करना तथा विद्यार्थियों को प्रवीण बनाना।
- पत्राचार के विविध रूपों में का अंतर बताना।
- पत्राचार के स्वरूप और प्रकारों के बारे में समझाना।
- विविध पत्रों के प्रारूप के मुख्य अंगों को पहचानना और उनके आधार पर उनमें परस्पर भेद बताना।
- विभिन्न संदर्भों में विभिन्न पत्र प्रकारों का प्रयोग करना।
- पत्राचार की भाषा शैली के बारे में जानकारी देना।

## "पत्राचार" प्रमाण पत्र पाठ्यक्रम - प्रारूप

- प्रश्न पत्र 1. पत्राचार (कुल अंक 100)
- अवधि : तीन माह (Duration : 3 months)
- व्याख्यान : प्रत्येक प्रश्न पत्र हेतु 60 lectures
- लिखित परीक्षा अवधि : 3 घंटे
- प्रश्न पत्र क्रेडिट 4
- पाठ्यक्रम शुल्क : निशुल्क



प्रश्न पत्र : पत्राचार

कुल अंक 100

यूनिट 1 (कुल व्याख्यान 15) श्रेयांक - 1

1. पत्राचार : अर्थ, परिभाषा और स्वरूप
2. पत्राचार : विविध प्रकार
3. पत्राचार : आवश्यकता
4. पत्राचार : महत्व और उपयोगिता

यूनिट 2 (कुल व्याख्यान 15) श्रेयांक - 1

1. सामाजिक तथा व्यवहारिक पत्र : अर्थ, परिभाषा और स्वरूप
2. सामाजिक तथा व्यवहारिक पत्र : विविध प्रकार
3. सामाजिक तथा व्यवहारिक पत्र : आवश्यकता
4. सामाजिक तथा व्यवहारिक पत्र : महत्व और उपयोगिता

यूनिट 3 (कुल व्याख्यान 15) श्रेयांक - 1

1. सरकारी तथा कार्यालयीन पत्र : अर्थ, परिभाषा और स्वरूप
2. सरकारी तथा कार्यालयीन पत्र : विविध प्रकार
3. सरकारी तथा कार्यालयीन पत्र : आवश्यकता
4. सरकारी तथा कार्यालयीन पत्र : महत्व और उपयोगिता



## यूनिट 4 (कुल व्याख्यान 15) श्रेयांक - 1

1. आवेदन पत्र के प्रकार
2. आवेदन पत्र के लिए आवश्यक बातें
3. आवेदन पत्र के अंतर्गत अपेक्षित मुद्दे
4. आवेदन पत्र के नमूने

यूनिट 4 प्रकल्प हेतु 15 अंकों का पत्राचार लेखन कार्य एवं 05 अंक कक्षा में उपस्थिति, सक्रिय सहभागिता, अनुशासन आदि के लिए। - कुल अंक 20

### निर्देश -

1. उपर्युक्त क्षेत्र से संबंधित पत्राचार
2. प्रकल्प 15 अंकों का लगभग 15 प्रश्न A4 साइज (पृष्ठ के एक और हस्त लिखित, तथा स्रोत सामग्री की छाया प्रति संलग्न पृष्ठों में हो, पाठ्यक्रम की अवधि के दौरान पूर्ण किया जाए
3. पत्राचार पाठ्यक्रम के दौरान शैक्षणिक भ्रमण हेतु शैक्षणिक संस्थाएं, बैंकिंग क्षेत्र, राजभाषा कार्यालय इत्यादि में पत्राचार के व्यावहारिक ज्ञान हेतु न्यूनतम एक भेंट यात्रा/विक्षण/मुआयना (विजिट) अनिवार्य है
4. पत्राचार प्रमाण पत्र पाठ्यक्रम के प्रश्न पत्र हेतु लिखित परीक्षा की अवधि 3 घंटे रहेगी।



प्रश्न - पत्र प्रारूप -

कुल अंक - 100

प्रश्न 1. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित) -

20

प्रश्न 2. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित) -

20

प्रश्न 3. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित) -

20

प्रश्न 4. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित) -

20

अथवा

वस्तुनिष्ठ प्रश्न -

10

बहुविकल्पीय प्रश्न -

10

प्रश्न 5. दीर्घोत्तरीय प्रश्न (आंतरिक विकल्प सहित) -

20

अथवा

प्रकल्प -

15

कक्षा में उपस्थित सक्रिय सहभागिता अनुशासन आदि -

05

कुल योग - पूर्णांक

10







NANDED EDUCATION SOCIETY'S  
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**CERTIFICATE COURSE**

**IN**

**Advanced Excel In Data Analysis**

**ORGANIZED BY**

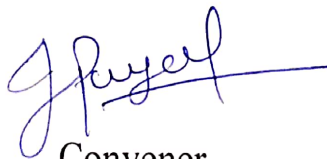
**DEPARTMENT OF STATISTICS**

**Science College, Nanded**

**2023-24**

## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of the Course	<b>Certificate Course in Advanced Excel In Data Analysis</b>
2.	Eligibility for Admission	<b>Candidate who have Statistics Subject in B.Sc.</b>
3.	Passing Marks	<b>The candidate must obtain 40% of the total marks in theory and practical separately to pass the course</b>
4.	No. of Years/ Semester	<b>Three month</b>
5.	Level	<b>College</b>
6.	To be implemented from the Academic Year	<b>From Academic year 2021-22</b>



Convener  
**Mr. H. S. Puyed**



Principal  
**Dr. D. U. Gawai**

## **OBJECTIVES OF THE CERTIFICATE COURSE:**

- The main objective of this course is to provide basic knowledge of MS-Excel for Statistical Techniques to the students.
- The purpose of this course is to teach students to identify spreadsheet terminology and concepts, create formulas and functions, use formatting features, and generate charts, graphs, and reports. At the end of the course the students are expected to be able to successfully use the program to create spreadsheets, enter data, and maintain that data, you must have more than basic knowledge.
- This course gives you the advanced skills you need to be able to fully use the program.
- This course is design for the intermediate student who has already mastered the basic skills needed to use Excel and wants to gain Statistical Functions in MS-Excel to put to work in a business environment or for personal use.

## **COURSE OUTCOME:**

- To Provide the basic Knowledge of MS-Excel for the Statistical Technique to the Students.
- To identify the spreadsheet terminology and concepts, create formulas and functions, use the formatting features and generate charts, graph and reports.

- To analyze the numerical data by using statistical tools and functions.

### **ORDINANCES FOR CERTIFICATE COURSE:**

The Certificate Course in “Advanced Excel In Data Analysis” started with keeping view of “Career Oriented Certificate Course” will be covered under following ordinances.

1. Number of Students per batch are 25.
2. The admission/ examination shall be opened to any candidate who has Statistics Science as optional subject of this institute.
3. The candidate after passing examination will be awarded.
4. The supplementary examination shall be held in semester end or as fixed by the department.
5. Every candidate will be required to attend minimum of 75% lectures / periods delivered to that class.
6. The candidate must obtain 40% of the total marks in theory and practical separately to pass the course.
7. Candidates will be offered English as the medium of Instructions/ Examination.

# COURSE STRUCTURE

Title of Course: Certificate Course in *Advanced Excel In Data Analysis*.

Marks - 100

Hours - 90

Duration: 3 Months

## Specific Equipment's:

Computer, LCD, Projector, Visualizer and Smart Board.

## Laboratory Equipment's:

1. A Well-furnished computer lab with sufficient computers.
2. Each Computer should have MS-Excel.
3. Battery Backup with UPS.
4. Internet facility.

## Syllabus of the Course:

### Unit-I: Introduction to MS-Excel:

Introduction, Navigating MS Excel, Cells, Rows, and Columns, Formulas, Sheet Tabs, Page Margins, Page Orientation, Page Breaks and Printing. Worksheets and Workbooks: Definition of Worksheets and Workbooks, Naming of Worksheets, Adding and Deleting Worksheets, Hiding/ Unhiding Worksheets, Hiding Columns and Rows, Saving Workbooks, saving an Existing File, Headers and Footers, Inserting, Deleting, copy and Renaming of Worksheets.

### Unit-II: Entering & Editing Information:

Entering Data, Labels and Values, Copying Cells, Rows and Columns, Pasting Cells, Rows, and Columns, paste an Item from the Clipboard, Inserting and Deleting Rows and Columns, Filling

and Editing Cell Data, Find and Replace, Go To Cell Data, Locking Rows and Columns, Spell Check, AutoCorrect.

### Unit 3: Formatting & Adding Elements to a Worksheet

Change Font Styles and Sizes, Adding Borders and Colors to Cells, change a Column Width, change a Row Height, Merge Cells, Applying Number Formats, Creating Custom Number Formats, Align Cell Contents, Cell Styles, Conditional Formatting, Freeze and Unfreeze Rows and Columns, Adding and Modifying Images, Removing A Background, Cropping and Rotating an image, compressing a Picture, Inserting AutoShapes, Adding WordArt, Clip Art, and a Hyperlink.

### Unit-4:

Diagrammatic and Graphical representation by using MS- Excel, Introduction to R software, Basic functions of R, Input functions of R, Data frame, Diagrammatic and Graphical Representation by using R.

### Recommended Books:

1. Kumar Bittu, Microsoft Office 2010.
2. Frag Curtis, Step by Step Microsoft Excel 2013.
3. John Walkenbach, 101 Excel 2013 Tips, Tricks and Time savers.
4. Salkind Neil J. Statistics for people who (Think They) Hate Statistics, Using MS- Excel.

### Learning Outcomes:

1. Students are able to draw diagram and graphs by using MS-Excel.
2. Students are creating data sheet.
3. Students are analyzing data by using statistical formulae and functions.

## Practical: (24 practical)

- 1) Perform following using MS-Excel
  - i) Create Worksheet
  - ii) Rename the worksheet
  - iii) Hide the worksheet
  - iv) Add and Delete the worksheet
  - v) Save the worksheet
  
- 2) Perform following using MS-Excel
  - i) Insert and Delete Row and Column
  - ii) Hide Row and Column
  - iii) Change Column width
  - iv) Change Row height
  
- 3) Perform following using MS-Excel
  - i) Page break
  - ii) Page Margin
  - iii) Header and Footer
  - iv) Hiding Rows and Columns
  
- 4) Perform following using MS-Excel
  - i) Change Font style
  - ii) Fill and Border the cell
  - iii) Header and Footer
  - iv) Hiding Rows and Columns
  
- 5) Execute the following commands

- i) Find
  - ii) Replace
  - iii) Go To
  - iv) Spell Check
  - v) Copy and Paste
- 6) Perform following using MS-Excel
- i) Add Border and color to cell
  - ii) Add image
  - iii) Freeze and Unfreeze Row and Column
  - iv) Merge cell
- 7) Basic functions using MS-Excel-I (e.g. SUM, Count, arithmetic operators, etc).
- 8) Basic Functions using MS- Excel-II
- 9) Conditional logic functions.
- 10) Diagrammatic representation using MS-Excel
- 11) Graphical representation using MS-Excel- I.
- 12) Graphical representation using MS-Excel- II.
- 13) Sort data, Formula copy, and drag a formula.
- 14) Measures of Central Tendency –I (Individual data)
- 15) Measures of Central Tendency –II (using function)
- 16) Measures of Central Tendency –III (freq. dist.)
- 17) Measures of Dispersion-I (Individual data)
- 18) Measures of Dispersion-II (using function)
- 19) Measures of Dispersion-II (freq. dist.)
- 20) Measures of Moments, Skewness, Kurtosis (Individual data)



- 21) Measures of Moments, Skewness, Kurtosis (freq. dist.)
- 22) Input functions of R software
- 23) Diagrammatic representation by using R-SW
- 24) Graphical representation by using R-SW.

### **Learning Outcomes(Practical):**

After completing the practical course students are getting knowledge about the MS- Excel, Students are able to draw diagram and graphs by using MS- Excel, as well as they write small programmed in R software for drawing diagram such as Bar Diagram, Pie Diagram and Graphs such as Histogram, Ogive curve etc.

Project course: for 24 periods and 2 credits Students are submitting project based on statistical analysis and graphical- diagrammatic representation on statistical data.



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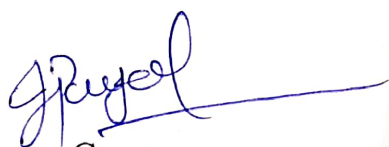
**DEPARTMENT OF STATISTICS**

**Science College, Nanded**

**2022-23**

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Sr. No.	Criteria	Particulars
1.	Title of the Course	<b>Certificate Course in Advanced Excel In Data Analysis</b>
2.	Eligibility for Admission	<b>Candidate who have Statistics Subject in B.Sc.</b>
3.	Passing Marks	<b>The candidate must obtain 40% of the total marks in theory and practical separately to pass the course</b>
4.	No. of Years/ Semester	<b>Three month</b>
5.	Level	<b>College</b>
6.	To be implemented from the Academic Year	<b>From Academic year 2021-22</b>



Convener

**Mr. H. S. Puyed**



Principal

**Dr. D. U. Gawai**





## OBJECTIVES OF THE CERTIFICATE COURSE:

- The main objective of this course is to provide basic knowledge of MS-Excel for Statistical Techniques to the students.
- The purpose of this course is to teach students to identify spreadsheet terminology and concepts, create formulas and functions, use formatting features, and generate charts, graphs, and reports. At the end of the course the students are expected to be able to successfully use the program to create spreadsheets, enter data, and maintain that data, you must have more than basic knowledge.
- This course gives you the advanced skills you need to be able to fully use the program.
- This course is design for the intermediate student who has already mastered the basic skills needed to use Excel and wants to gain Statistical Functions in MS-Excel to put to work in a business environment or for personal use.

## COURSE OUTCOME:

- To Provide the basic Knowledge of MS-Excel for the Statistical Technique to the Students.



- To identify the spreadsheet terminology and concepts, create formulas and functions, use the formatting features and generate charts, graph and reports.
- To analyze the numerical data by using statistical tools and functions.

### **ORDINANCES FOR CERTIFICATE COURSE:**

The Certificate Course in “Advanced Excel In Data Analysis” started with keeping view of “Career Oriented Certificate Course” will be covered under following ordinances.

1. Number of Students per batch are 25.
2. The admission/ examination shall be opened to any candidate who has Statistics Science as optional subject of this institute.
3. The candidate after passing examination will be awarded.
4. The supplementary examination shall be held in semester end or as fixed by the department.
5. Every candidate will be required to attend minimum of 75% lectures / periods delivered to that class.
6. The candidate must obtain 40% of the total marks in theory and practical separately to pass the course.
7. Candidates will be offered English as the medium of Instructions/ Examination.



## COURSE STRUCTURE

Title of Course: Certificate Course in *Advanced Excel In Data Analysis*.

Marks - 100

Hours - 90

Duration: 3 Months

### Specific Equipment's:

Computer, LCD, Projector, Visualizer and Smart Board.

### Laboratory Equipment's:

1. A Well-furnished computer lab with sufficient computers.
2. Each Computer should have MS-Excel.
3. Battery Backup with UPS.
4. Internet facility.

### Syllabus of the Course:

#### Unit-I: Introduction to MS-Excel:

Introduction, Navigating MS Excel, Cells, Rows, and Columns, Formulas, Sheet Tabs, Page Margins, Page Orientation, Page Breaks and Printing. Worksheets and Workbooks: Definition of Worksheets and Workbooks, Naming of Worksheets, Adding and Deleting Worksheets, Hiding/ Unhiding Worksheets, Hiding Columns and Rows, Saving Workbooks, saving an Existing File, Headers and Footers, Inserting, Deleting, copy and Renaming of Worksheets.

#### Unit-II: Entering & Editing Information:

Entering Data, Labels and Values, Copying Cells, Rows and Columns, Pasting Cells, Rows, and Columns, paste an Item from the Clipboard, Inserting and Deleting Rows and Columns, Filling



and Editing Cell Data, Find and Replace, Go To Cell Data, Locking Rows and Columns, Spell Check, AutoCorrect.

### Unit 3: Formatting & Adding Elements to a Worksheet

Change Font Styles and Sizes, Adding Borders and Colors to Cells, change a Column Width, change a Row Height, Merge Cells, Applying Number Formats, Creating Custom Number Formats, Align Cell Contents, Cell Styles, Conditional Formatting, Freeze and Unfreeze Rows and Columns, Adding and Modifying Images, Removing A Background, Cropping and Rotating an image, compressing a Picture, Inserting AutoShapes, Adding WordArt, Clip Art, and a Hyperlink.

### Unit-4:

Diagrammatic and Graphical representation by using MS- Excel, Introduction to R software, Basic functions of R, Input functions of R, Data frame, Diagrammatic and Graphical Representation by using R.

### Recommended Books:

1. Kumar Bittu, Microsoft Office 2010.
2. Frag Curtis, Step by Step Microsoft Excel 2013.
3. John Walkenbach, 101 Excel 2013 Tips, Tricks and Time savers.
4. Salkind Neil J. Statistics for people who (Think They) Hate Statistics, Using MS- Excel.

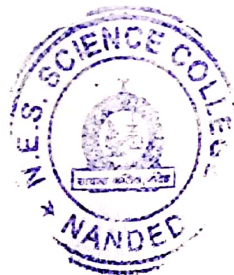
### Learning Outcomes:

1. Students are able to draw diagram and graphs by using MS-Excel.
2. Students are creating data sheet.
3. Students are analyzing data by using statistical formulae and functions.



## Practical: (24 practical)

- 1) Perform following using MS-Excel
  - i) Create Worksheet
  - ii) Rename the worksheet
  - iii) Hide the worksheet
  - iv) Add and Delete the worksheet
  - v) Save the worksheet
  
- 2) Perform following using MS-Excel
  - i) Insert and Delete Row and Column
  - ii) Hide Row and Column
  - iii) Change Column width
  - iv) Change Row height
  
- 3) Perform following using MS-Excel
  - i) Page break
  - ii) Page Margin
  - iii) Header and Footer
  - iv) Hiding Rows and Columns
  
- 4) Perform following using MS-Excel
  - i) Change Font style
  - ii) Fill and Border the cell
  - iii) Header and Footer
  - iv) Hiding Rows and Columns
  
- 5) Execute the following commands





- i) Find
  - ii) Replace
  - iii) Go To
  - iv) Spell Check
  - v) Copy and Paste
- 6) Perform following using MS-Excel
- i) Add Border and color to cell
  - ii) Add image
  - iii) Freeze and Unfreeze Row and Column
  - iv) Merge cell
- 7) Basic functions using MS-Excel-I (e.g. SUM, Count, arithmetic operators, etc).
- 8) Basic Functions using MS- Excel-II
- 9) Conditional logic functions.
- 10) Diagrammatic representation using MS-Excel
- 11) Graphical representation using MS-Excel- I.
- 12) Graphical representation using MS-Excel- II.
- 13) Sort data, Formula copy, and drag a formula.
- 14) Measures of Central Tendency –I (Individual data)
- 15) Measures of Central Tendency –II (using function)
- 16) Measures of Central Tendency –III (freq. dist.)
- 17) Measures of Dispersion-I (Individual data)
- 18) Measures of Dispersion-II (using function)
- 19) Measures of Dispersion-II (freq. dist.)
- 20) Measures of Moments, Skewness, Kurtosis (Individual data)



- 21) Measures of Moments, Skewness, Kurtosis (freq. dist.)
- 22) Input functions of R software
- 23) Diagrammatic representation by using R-SW
- 24) Graphical representation by using R-SW.

### Learning Outcomes(Practical):

After completing the practical course students are getting knowledge about the MS- Excel, Students are able to draw diagram and graphs by using MS-Excel, as well as they write small programmed in R software for drawing diagram such as Bar Diagram, Pie Diagram and Graphs such as Histogram, Ogive curve etc.

Project course: for 24 periods and 2 credits Students are submitting project based on statistical analysis and graphical- diagrammatic representation on statistical data.





NANDED EDUCATION SOCIETY'S  
**SCIENCE COLLEGE, NANDED**

(Affiliated to Swami RamanandTeerthMarathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**CERTIFICATE COURSE**

**IN**

**Advanced Excel In Data Analysis**

ORGANIZED BY

**DEPARTMENT OF STATISTICS**

**N. E. S. Science College, Nanded.  
2021-22**

## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of the Course	<b>Certificate Course in Advanced Excel In Data Analysis</b>
2.	Eligibility for Admission	<b>Candidate who have Statistics Subject in B.Sc.</b>
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6.	To be implemented from the Academic Year	<b>From Academic year 2021-22</b>



Convener  
**Mr. H. S. Puyed**



Principal  
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## **OBJECTIVES OF THE CERTIFICATE COURSE:**

- The main objective of this course is to provide basic knowledge of MS-Excel for Statistical Techniques to the students.
- The purpose of this course is to teach students to identify spreadsheet terminology and concepts, create formulas and functions, use formatting features, and generate charts, graphs, and reports. At the end of the course the students are expected to be able to successfully use the program to create spreadsheets, enter data, and maintain that data, you must have more than basic knowledge.
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## **COURSE OUTCOME:**

- To Provide the basic Knowledge of MS-Excel for the Statistical Technique to the Students.
- To identify the spreadsheet terminology and concepts, create formulas and functions, use the formatting features and generate charts, graph and reports.
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7. Candidates will be offered English as the medium of Instructions/ Examination.

# COURSE STRUCTURE

Title of Course: Certificate Course in *Advanced Excel In Data Analysis*.

Marks - 100

Hours - 90

Duration: 3 Months

## Specific Equipment's:

Computer, LCD, Projector, Visualizer and Smart Board.

## Laboratory Equipment's:

1. A Well-furnished computer lab with sufficient computers.
2. Each Computer should have MS-Excel.
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4. Internet facility.

## Syllabus of the Course:

### Unit-I: Introduction to MS-Excel:

Introduction, Navigating MS Excel, Cells, Rows, and Columns, Formulas, Sheet Tabs, Page Margins, Page Orientation, Page Breaks and Printing. Worksheets and Workbooks: Definition of Worksheets and Workbooks, Naming of Worksheets, Adding and Deleting Worksheets, Hiding/Unhiding Worksheets, Hiding Columns and Rows, Saving Workbooks, saving an Existing File, Headers and Footers, Inserting, Deleting, copy and Renaming of Worksheets.

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#### **Unit-4:**

Diagrammatic and Graphical representation by using MS- Excel, Introduction to R software, Basic functions of R, Input functions of R, Data frame, Diagrammatic and Graphical Representation by using R.

#### **Recommended Books:**

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- v) Save the worksheet

2) Perform following using MS-Excel

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- ii) Hide Row and Column
- iii) Change Column width
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3) Perform following using MS-Excel

- i) Page break
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- iv) Hiding Rows and Columns

4) Perform following using MS-Excel

- i) Change Font style
- ii) Fill and Border the cell
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- iv) Hiding Rows and Columns

5) Execute the following commands

- i) Find
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**CERTIFICATE COURSE**

**IN**

**Statistical Analysis of fertilizers in  
Agriculture**

**ORGANIZED BY**

**DEPARTMENT OF STATISTICS**

**N. E. S. Science College,**

**Nanded**

**2023-24**

**PRINCIPAL**

**N. E. S. Science College, Nanded**

### **OBJECTIVES OF THE CERTIFICATE COURSE:**

- Learn fundamental concepts of Statistical methods and technique.
- Learn Experimental Design to an intermediate level.
- Be able to use sampling technique in Agriculture.
- Be able to use inferential statistics in Agriculture.
- Understand the importance and major use of Statistical method in Agriculture.

### **COURSE OUTCOME:**

- Students will acquire the basic knowledge about Statistical Methods.
- Able to write themselves sampling technique.
- Able to retrieve records for Experimental Design
- Acquire knowledge about Design of Experiments.

### **ORDINANCES FOR CERTIFICATE COURSE:**

The Certificate Course in Statistical Analysis of fertilizers in Agriculture started with keeping view of "Career Oriented Certificate Course" will be covered under following ordinances.

1. Number of Students per batch are 20.
2. The admission/ examination shall be opened to any candidate who has Statistics Science as optional subject of this institute.

## COURSE STRUCTURE

Subject: Statistical Analysis of effect of fertilizers in Agriculture.  
Title of Course: Certificate Course in Statistical Analysis of fertilizers in Agriculture.

Marks - 100

Hours - 90

Duration: 3 Months

### Syllabus of the Course

#### AST 501 Statistical Methods for Applied Sciences

Review of probability, Discrete and continuous probability distributions: Binomial, Poisson, Normal distribution, their applications and fitting of distributions. Sampling distribution- means and proportions, Standard error. Introduction to theory of estimation and confidence-intervals. Testing of Hypothesis, type-I and type-II errors. Tests of significance based on Normal, Student t, F distributions and Chi-square. Correlation and regression. Simple linear regression model, estimation of parameters, predicted values. Test of significance of correlation and regression coefficients. Coefficient of determination. Analysis of variance technique. One way analysis of variance. Two way analysis with one and multiple observations.

#### Practical

Solving problems on above topics.

## AST 502 Experimental Designs

Need for designing of experiments, characteristics of a good design. Basic principles of designs- randomization, replication and local control. Uniformity trials, size and shape of plots and blocks; Analysis of variance; Completely randomized design, randomized block design and Latin square design. Missing plot techniques in randomized block and Latin square designs; Factorial experiments, (symmetrical as well as asymmetrical) Orthogonality and partitioning of degrees of freedom, Confounding in symmetrical factorial experiments, Factorial experiments with control treatment. Split plot and strip plot designs; Analysis of covariance and variance stabilizing transformations

### Practical

Uniformity trial data analysis, formation of plots and blocks, Fairfield Smith Law; Analysis of data obtained from CRD, RBD, LSD; Analysis of factorial experiments without and with confounding; Analysis with missing data; Split plot and strip plot designs; Transformation of data

## AST 503 Sampling Techniques

Concept of sampling, sample survey vs complete enumeration, planning of sample survey, sampling from a finite population. Simple random sampling, sampling for proportion, determination of sample size; Stratified sampling. Cluster sampling, PPS sampling, Multi-stage sampling, double sampling, systematic sampling; Use of auxiliary information at estimation as well as selection stages. Ratio and regression estimators. Construction and analysis of survey designs, sampling and non-sampling errors; Preparation of questionnaire Non-sampling errors inverse sampling.

### Practical

Random sampling use of random number tables, concepts of unbiasedness, variance, etc.; simple random sampling, determination of sample size; Exercises on sampling, stratified sampling, cluster sampling and systematic sampling; Estimation using ratio and regression estimators Estimation using multistage design, double sampling and PPS sampling.

## AST 510 Design of Experiments

Test of hypothesis, analysis of variance, partitioning of degrees of freedom, analysis of covariance; Basic principles of design of experiments, uniformity trials, size and shape of plots and blocks. Basic designs – completely randomized design, randomized complete block design and Latin square design; orthogonal Latin squares, mutually orthogonal Latin squares (MOLS), Balanced incomplete block (BIB) designs general properties and analysis without and with recovery of intra block information, construction of BIB designs. Missing plot technique; Split plot and Strip plot design; Groups of experiments; Sampling in field experiments.

### Practical

Determination of size and shape of plots and blocks from uniformity trials data; Analysis of data generated from completely randomized design, randomized complete block design; Latin square design.



## AST 508 Statistical Inference

Concepts of point estimation: MSE, unbiasedness, consistency, efficiency and sufficiency. MVUE, Fisher information, Moments, minimum chi-square, least square and maximum likelihood methods of estimation and statements of their properties. Interval estimation-Confidence level, CI for the parameters of Normal, Exponential, Binomial and Poisson distributions. Fundamental notions of hypothesis testing- statistical hypothesis, statistical test, critical region, types of errors, test function, randomized and nonrandomized tests, level of significance, power function, most powerful tests: Neyman- Pearson fundamental lemma, MLR families and UMP tests for one parameter exponential families. Non-parametric tests: Sign test, Wilcoxon signed rank test, Runs test for randomness, Kolmogorov Smirnov test for goodness of fit, Median test and Wilcoxon-Mann-Whitney U-test.

### Practical

Methods of estimation – Maximum Likelihood, Minimum chi-square and Moments; Confidence Interval Estimation; MP and UMP tests; Large Sample tests; Non-parametric tests, Sequential Probability Ratio Test; Decision functions

Nanded Education Society's,  
**SCIENCE COLLEGE,**  
**NANDED.**

Department of Chemistry, Analytical Chemistry &  
Agrochemicals & Fertilizers.




**CERTIFICATE COURSE**

**IN**

**Handling of Instruments in Chemistry**

**(Two Months)**

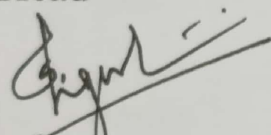
**COURSE STRUCTURE AND SCHEME**  
**2023 - 24**

  
Principal  
V.E.S. Science College.

## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of course	"Handling of Instruments in Chemistry"
2.	Eligibility For Admission	All science Faculty Candidates
3.	Passing Marks	The candidate must obtain 35% of the total marks in theory and practical separately to pass the course
4.	Period of Course	Two Months
5.	Level	college
6.	Pattern	Semester
7.	To be implemented from the Academic Year	2023 - 24

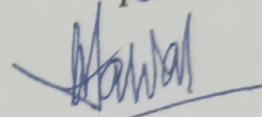
Head



Prof. Dr. S. R. Pingalkar

**Head**  
Department of Chemistry,  
Analytical Chemistry, Agrochemicals & Fertilizers,  
Science College, Nanded

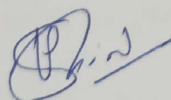
Principal



Prof. Dr. D. U. Gawai

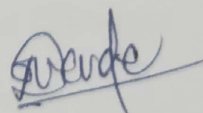
**Principal**  
N.E.S. Science College,  
Nanded

Course Coordinator



Prof. Dr. L. P. Shinde

Course Co-coordinator



Mr. G. U. Devde



Mr. M. D. Bhalerao

## **Paper I:- Handling of instruments in Chemistry (Theory)**

### **Course Learning Outcomes:**

After successful completion of the course, students will be able to:

1. Get basic knowledge on various solutions. .
2. Understand the principal and handling of instruments.
3. Comprehend certain skills of detecting results of various compounds .
4. Be able to extend their knowledge to other kinds of analysis of mixtures .
5. Know the basic laws and procedures regarding handling of instruments and preparation of solutions

### **Unit I Ultraviolet Spectroscopy**

#### **1 Introduction.**

#### **2. Types of Transitions in Organic Molecules.**

#### **3. Origin and Theory**

### **Unit II; Potentiometric Titrations...**

#### **1.Introduction.....**

#### **2.Instrumentation.....**

#### **3. Types of Potentiometric Titrations**

### **Unit III : Conductometric Measurements.**

#### **1. Introduction.**

#### **2. Some Important Laws, Definitions and Relations**

#### **3. Effect of Dilution**

### **Unit IV: Measurement of pH**

#### **1.Introduction**

#### **2.Determination of pH**

#### **3. Selective electrode**

## Paper II Practicals

1. To determine velocity constant and energy of activation for saponification of ethyl acetate by NaOH conductometrically.
2. To determine the relative strength of chloroacetic acid and acetic acid conductometrically
3. To determine equivalent conductivity of strong electrolyte at several concentrations and to verify Onsager's equation.
4. To determine the solubility and solubility product of sparingly soluble salt, [BaSO<sub>4</sub>/PbSO<sub>4</sub>] at different temperatures conductometry.
5. To determine potentiometrically the pK<sub>1</sub> and pK<sub>2</sub> values of H<sub>3</sub>PO<sub>4</sub>
6. To determine Hammett constant of given substituted benzoic acid using pH-mete
7. To determine pH values of various mixtures of sodium acetate and acetic acid in aqueous solution and hence find out dissociation constant of acid.
8. To determine concentration of Cu (II) ion in given solution titrating with EDTA solution by calorimetry.
9. To determine the relative strength of two acids by polarometry.
10. To study the variation of refractive index with composition of mixtures of CCl<sub>4</sub> and ethyl acetate.(Any other related experiments may be added)
11. Preparation of standard solution of potassium hydrogen phthalate and standardization of sodium hydroxide solution.
12. Preparation of standard solution of K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> and standardization of given FeSO<sub>4</sub> solution.
13. Preparation of standard solution of (COONa<sub>2</sub>) and standardization of given KMnO<sub>4</sub> solution.
14. Preparation of Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> solution and its standardization using standard K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>/ KIO<sub>3</sub> solution.

15. Preparation of standard solution of NaCl and standardization of given AgNO<sub>3</sub> solution.

16. Separation of metal ions (Cu<sup>2+</sup>, Pb<sup>2+</sup> and Cd<sup>2+</sup>) / (Zn<sup>2+</sup>, Co<sup>2+</sup> & Ni<sup>2+</sup>) by paper chromatography.

17. Colorimetric estimation of proteins by biuret method.

18) Determination of Ascorbic Acid in Vitamin C Tablets By redox titration.

19) Determination of refractive index of a given organic liquid by Abbe's Refractometer

20. Spectrophotometric determination of lead on leaves using solvent extraction.

21. Spectrophotometric determination of manganese and chromium in mixture.

## Course objectives:

- To understand basic principles and theory of different instruments and to understand
- Qualitative and quantitative analysis To perform different experiments using equipments like conductivity meter, pH meter,
- Potentiometer, calorimeter, refractometer etc. and set various experiments based on the different instrumentations which will have industrial applications
- To understand basic principles and theory of measurements of density, viscosity, refractive index, surface tension, adsorption and perform the calculations
- To understand role of various factors in structure determination of coordination complexes,
- Principles and operating procedures and applications of analytical techniques in structure determination. To learn various basic principles involved in the analysis of inorganic mixtures, nature of
- Inorganic mixtures and radicals by conducting various tests, various reactions involved. To prepare and use various reagents and solutions required for the analysis of inorganic mixtures.
- To understand basic principles and theory of different instruments and to understand
- Qualitative and quantitative analysis to perform different experiments using equipments like conductivity meter, pH meter,
- Potentiometer, calorimeter, refractometer etc. and set various experiments based on the different instrumentations which will have industrial applications
- To understand basic principles and theory of measurements of density, viscosity, refractive index, surface tension, adsorption and perform the calculation



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**CERTIFICATE COURSE**

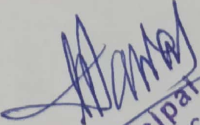
IN

**FOOD ADULTERATION**

*ORGANIZED BY*

**Department of Chemistry, Analytical  
Chemistry, Agrochemicals and Fertilizers  
Science College, Nanded**


**2022-23**


  
Principal  
N.E.S. Science College,  
Nanded



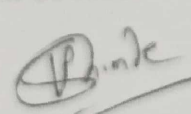
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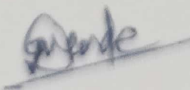
Sr. No.	Criteria	Particulars
1.	Title of the Course	Certificate Course in Food Adulteration
2.	Eligibility for Admission	Candidate who have passed 10+2 examination with at least 55% marks in aggregate in Science
3.	Passing Marks	The candidate must obtain 35% of the total marks in theory and practical separately to pass the course
4.	No. of Years/ Semester	Two Months
5.	Level	College
6.	Pattern	Semester
7.	To be implemented from the Academic Year	From Academic year 2022-23

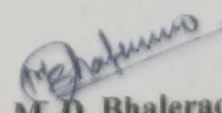
Head  
  
 Head  
 Department of Chemistry,  
 N.E.S. Science College, Nanded  
 Course Co-ordinator

  
 Principal  
 Principal  
 N.E.S. Science College,  
 Nanded

Course Co-ordinators

  
 Dr. L. P. Shinde.

  
 Mr. G. U. Devde.

  
 Mr. M. D. Bhalerao.

## OBJECTIVES OF THE CERTIFICATE COURSE:

- It is an opportunity for you to receive experience in applying theories learned in the classroom to specific experiences in the community and work world.
- An internship can also heighten your awareness of community issues, motivate you to create opportunities, embrace new ideas, and give direction to positive change.
- Field project/Internships/Community engagements are designed to expand the depth and breadth of academic learning for you in your particular areas of study.
- To useful for contribution in modern adulteration practices.

## COURSE OUTCOME:

- Get basic knowledge on various foods and about adulteration.
- Understand the adulteration of common foods and their adverse impact on health.
- Comprehend certain skills of detecting adulteration of common foods.
- Be able to extend their knowledge to other kinds of adulteration, detection and remedies

## ORDINANCES FOR CERTIFICATE COURSE:

The Certificate Course in **Food Adulteration** started with keeping view of "Career Oriented Certificate Course" will be covered under following ordinances.

1. Number of Students per batch are 20.
2. The admission/ examination shall be opened to any candidate who has passed 10+2 examination with at least 45% marks in aggregate in Science.
3. The candidate after passing examination will be awarded a **Certificate**
4. The supplementary examination shall be held in semester end or as fixed by the department.
5. Every candidate will be required to attend minimum of 75% lectures / periods delivered to that class.
6. The candidate must obtain 35% of the total marks in theory and practical separately to pass the course.
7. Candidates will be offered English & Marathi as the medium of Instructions/ Examination.

## COURSE STRUCTURE

Subject: Analytical Chemistry

Title of Course: Certificate Course in Food Adulteration.

Marks - 100

Hours - 60

Duration: 2 Months

### Syllabus of the Course

#### UNIT - I

1. Common Foods subjected to adulteration
2. Definition: Types; Poisonous substances, Foreign matter, Cheap substitutes, Spoiled parts
3. Adulteration through Food Additives: Intentional and incidental.
4. General Impact on Human Health

#### UNIT - II

1. Means of Adulteration
2. Methods of Detection Adulterants in the following Foods; Milk, Oil, Grain, Sugar, Spices and condiments, Processed food, Fruits and vegetables.
3. Additives and Sweetening agents

#### UNIT-III

1. Highlights of Food Safety and Standards Act 2006 (FSSA)
2. Food Safety and Standards Authority of India.
3. Rules and Procedures of Local Authorities.
4. Role of voluntary agencies such as, Agmark, L.S.L.

## Practicals

1. Detection of METANIL YELLOW in A given food Samples
2. Check the presence of RHODAMINE B in the given food samples
3. Test the presence of sugar in Honey
4. Detection of  $\text{NaHCO}_3$  (Chalk) in flour
5. Check for the presence of VANASPATI AND RANCIDITY in the Ghee
6. Check the Milk for presence of PROTEINS, UREA, SUGAR AND STARCH
7. Test presence of starch in Khoa and its products
8. To check the prohibited colours in edible oil
9. To test the washing soda in jaggery
10. Test the Dhatura in jowar, Bajra, and other grains

## Modality of Assessment

Theory – 60 Marks

Practical – 40 Marks

Duration – The Examination shall be of 3 hours' duration.

## Theory question paper pattern

- 1) There shall be 3 questions each of 20 marks. On Each Unit there will be 1 question
- 2) All question shall be compulsory with Internal choice within the question
- 3) Terms for Practical Examination

Sr. No.	Particulars	Marks
1)	Practical Exam	25
2)	Skill Acquired	10
3)	Viva	05

Nanded Education Society's,  
**SCIENCE COLLEGE, NANDED.**

Department of Chemistry, Analytical Chemistry &  
Agrochemicals & Fertilizers.



**CERTIFICATE COURSE**

**IN**

**Preparation of Solutions and solvent**

**(Two Months)**

**COURSE STRUCTURE AND SCHEME**

**2023 - 24**

*[Signature]*  
Principal  
N.E.S. Science College,  
Nanded

## Short Information of Course

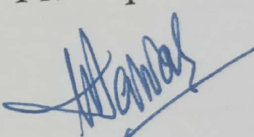
Sr. No.	Criteria	Particulars
1.	Title of course	Preparation of Solutions and Solvent
2.	Eligibility For Admission	All science Faculty Candidates
3.	Passing Marks	The candidate must obtain 35% of the total marks in theory and practical separately to pass the course
4.	Period of Course	Two Months
5.	Level	college
6.	Pattern	Semester
7.	To be implemented from the Academic Year	2023 - 24

Head

  
Prof. Dr. S. R. Pingalkar


Head  
Department of Chemistry,  
Analytical Chemistry, Agrochemicals & Forensic,  
Science College, Nanded

Principal

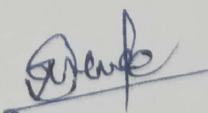
  
Prof. Dr. D. U. Gawai


Principal  
N.E.S. Science College,  
Nanded

Course Coordinator

  
Prof. Dr. L. P. Shinde

Course Co-coordinator

  
Mr. G. U. Devde

  
Mr. M. D. Bhalerao

## Syllabus Scheme

**Duration: Two Months**

**Eligibility: B.Sc. & M.Sc. Students**

Sr. No.	Paper No.	Total Workload	Max Marks	Internal Marks	External Marks	Min. Pass Marks
1	Paper I - Theory	30 Hours	100	20	80	40
2	Paper II – Internship/ Industrial training/ Project Work	30Hours	100	20	80	40
	Total	60	200	40	160	80

Note:

1. Internal Assessment for theory shall be based on performance in unit test & assignment

2. Internal Assessment for practical shall be based on followings

- i) Field Visit : 10 Marks
- ii) Record Book : 05 Marks
- iii) Viva : 05 Marks

# Course Outcomes ;

After successful completion of the course, students will be able to:

Get basic knowledge on various instruments and solutions. .

Understand the principal and handling of instruments.

Comprehend certain skills of detecting results of various compounds .

Be able to extend their knowledge to other kinds of analysis of mixtures .

Know the basic laws and procedures regarding handling of instruments and preparation of solutions

Student will be able to discuss role of various factors in structure determination of coordination complexes, various principles involved, operating procedures and applications of analytical techniques in structure determination.

Student will be able to discuss various principles involved in the analysis of inorganic mixtures, nature of inorganic mixtures and radicals, the importance of conducting various tests and various reactions involved. Student will be able to prepare and use various reagents and solutions required for the analysis of inorganic mixtures

Understand the basic principles and theory of different instruments used during the conduction of the experiments learn to understand qualitative and quantitative analysis Students will be able to perform different experiments using equipments like conductivity meter, pH meter, potentiometer, calorimeter, refractometer etc. and set various experiments based on the different instrumentations Students will be able to understand basic principles and theory of measurements of density, viscosity, refractive index, surface tension, adsorption and perform the calculations

Upon completion of the course, the students will understand basic principles, and be able to use principles and ideas to calculate properties of simple statistical systems. It includes, learning different statistical ensembles, their distribution functions, ranges of applicability and the corresponding thermodynamic potentials. Application of quantum and statistical distributions in circumstances varying from standard examples such as gases, solutions, polymer solutions, solids and electrolytic charge carriers to statistics will be greatly acknowledged. Also, students become aware of the richness and complexity of statistical behavior exhibited by interacting systems and various approaches (phenomenological and microscopic) developed to comprehend such systems.



## **Paper I:- Preparation of Solutions and Solvent (Theory)**

### **Course Learning Outcomes:**

After successful completion of the course, students will be able to:

1. Get basic knowledge on various solutions. .
2. Understand the principal and handling of instruments. .
3. Comprehend certain skills of detecting results of various compounds. .
4. Be able to extend their knowledge to other kinds of analysis of mixtures. .
5. Know the basic laws and procedures regarding handling of instruments and preparation of solutions

### **Unit I Selecting Equipment and Consumables**

1. Environment.
- 2.. Factors Affecting Quality
3. Laboratory Design
4. Siting of Instruments
5. Monitoring Changes

### **Unit II; Equipment and Glassware.**

1. Selection.
2. Condition
3. Cleaning.
4. Drying.

### **Unit III : . Chemicals and Consumables.**

1. Grade.
2. Labelling
3. Preparation
4. Manipulation.
5. Containers.
6. Storage
7. Safety.
8. Disposal.

### **Unit IV: Good Laboratory Practice.**

1. Before Starting an Analysis
2. During the Analysis.
3. After the Analysis

## Paper II Practicals

1. To determine velocity constant and energy of activation for saponification of ethyl acetate by NaOH conductometrically.
2. To determine the relative strength of chloroacetic acid and acetic acid conductometrically
3. To determine equivalent conductivity of strong electrolyte at several concentrations and to verify Onsager's equation.
4. To determine the solubility and solubility product of sparingly soluble salt,  $[\text{BaSO}_4/\text{PbSO}_4]$  at different temperatures conductometry.
5. To determine potentiometrically the  $\text{pK}_1$  and  $\text{pK}_2$  values of  $\text{H}_3\text{PO}_4$
6. To determine Hammett constant of given substituted benzoic acid using pH-mete
7. To determine pH values of various mixtures of sodium acetate and acetic acid in aqueous solution and hence find out dissociation constant of acid.
8. To determine concentration of Cu (II) ion in given solution titrating with EDTA solution by calorimetry.
9. To determine the relative strength of two acids by polarometry.
10. To study the variation of refractive index with composition of mixtures of  $\text{CCl}_4$  and ethyl acetate. (Any other related experiments may be added)
11. Preparation of standard solution of potassium hydrogen phthalate and standardization of sodium hydroxide solution.
12. Preparation of standard solution of  $\text{K}_2\text{Cr}_2\text{O}_7$  and standardization of given  $\text{FeSO}_4$  solution.
13. Preparation of standard solution of  $(\text{COONa})_2$  and standardization of given  $\text{KMnO}_4$  solution.
14. Preparation of  $\text{Na}_2\text{S}_2\text{O}_3$  solution and its standardization using standard  $\text{K}_2\text{Cr}_2\text{O}_7/\text{KIO}_3$  solution.

## Course Outcomes ;

After successful completion of the course, students will be able to:

Get basic knowledge on various instruments and solutions. .

Understand the principal and handling of instruments.

Comprehend certain skills of detecting results of various compounds .

Be able to extend their knowledge to other kinds of analysis of mixtures .

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**NANDED EDUCATION SOCIETY'S  
SCIENCE COLLEGE, NANDED**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**CERTIFICATE COURSE**

**IN**

**Soil Testing and Nutrient Analysis**

**ORGANIZED BY**

**Department of Chemistry, Analytical  
Chemistry, Agrochemicals and Fertilizers  
Science College, Nanded**

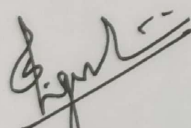
**2022-23**

**PRINCIPAL**

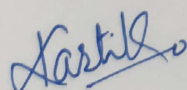
**R. S. Science College, Nanded**

## Short Information of Course

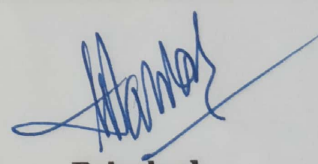
Sr. No.	Criteria	Particulars
1.	Title of the Course	<b>Certificate Course in Soil Testing and Nutrient Analysis</b>
2.	Eligibility for Admission	<b>Candidate who have passed 10+2 examination with at least 55% marks in aggregate in Science</b>
3.	Passing Marks	<b>The candidate must obtain 35% of the total marks in theory and practical separately to pass the course</b>
4.	No. of Years/ Semester	<b>Two Months</b>
5.	Level	<b>College</b>
6.	Pattern	<b>Semester</b>
7.	To be implemented from the Academic Year	<b>From Academic year 2022-23</b>



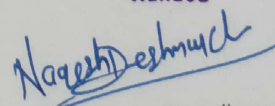
**Head**  
Department of Chemistry,  
Analytical Chemistry, Agrochemicals & Fertilizers,  
Science College, Nanded



Course Co-ordinator  
Mr. K. K. Jadhav



**Principal**  
Principal  
N.E.S. Science College,  
Nanded



Course Co-Coordinator  
Dr. N. J. Deshmukh



## OBJECTIVES OF THE CERTIFICATE COURSE:

- To evaluate the fertility status of soil
- To diagnose plant problems and help in quality plant production
- To learn basic components of soil and their properties
- To provide the basis for fertilizer recommendation
- To promote employment and entrepreneurship opportunities

## COURSE OUTCOMES:

- Students will develop instrument handling skills in laboratory
- Students will learn how to test the soil and make Soil Health Cards
- Student will be able to build their own startup business.
- Students will give accurate guidance to the farmers
- Increasing farmer's profitability in the long-term.

## ORDINANCES FOR CERTIFICATE COURSE:

The Certificate Course in "Soil testing & Nutrient analysis" started with keeping view of "Career Oriented Certificate Course" will be covered under following ordinances.

1. Number of Students per batch are 20.
2. The admission/ examination shall be opened to any candidate who has passed 10+2 examination with at least 45% marks in aggregate in Science.
3. The candidate after passing examination will be awarded a Certificate
4. The supplementary examination shall be held in semester end or as fixed by the department.
5. Every candidate will be required to attend minimum of 75% lectures / periods delivered to that class.
6. The candidate must obtain 35% of the total marks in theory and practical separately to pass the course.
7. Candidates will be offered English & Marathi as the medium of Instructions/ Examination.



# COURSE STRUCTURE

Subject: Agrochemicals and Fertilizers

Title of Course: Certificate Course in Soil testing & Nutrients analysis

Marks - 100

Hours - 60

Duration: 2 Months

## Syllabus of the Course

### UNIT - I

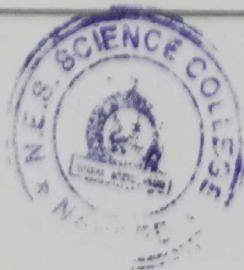
1. Introduction: Definition of Soil, Soil Components, Soil profile, Types of Soils
2. Properties of Soil: Physical, Chemical & Biological
3. Fertility Status of Soil: Soil deficiency, remedial measures to overcome deficiency
4. Soil Conservation and Management

### UNIT - II

1. Soil Sample Collection and Processing
2. Preservation, Labelling and Storage of soil samples
3. Soil Testing and Nutrient Analysis: Meaning, Scope and Importance, Methods
4. Precautions to be taken during sampling and testing

### UNIT-III

1. Brief Study of Instruments
2. Study of Laboratory Setup
3. Soil Test Report & Fertilizer Recommendation
4. Preparation of Soil Test Summaries and Fertility Maps

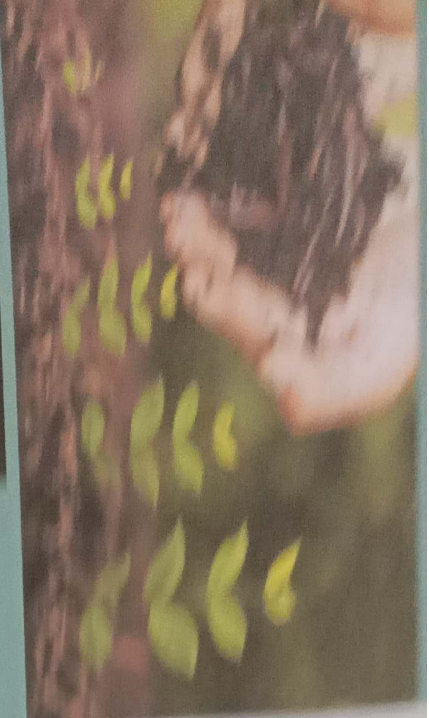


## Practicals

1. Visit to Soil Testing Laboratory & Report writing
2. Visit to Farmers Fields for Collection of Soil Samples, Identification of nutrient deficiency symptoms in Crop
3. Preparation of Various Chemical reagents required for soil testing
4. Processing of Soil Sampling for analysis
5. Determination of pH of soil sample using pH meter
6. Determination of Electrical Conductivity of Soil Sample using Electrical Conductivity meter
7. Determination of Organic Carbon by Wet Oxidation method
8. Determination of available Nitrogen from Soil Sample
9. Determination of available Phosphorus from soil sample
10. Determination of available Potassium from soil sample
11. Determination of Calcium Carbonate from soil sample
12. Determination of Micronutrients from soil sample
13. Determination of Lime requirement of acidic soil
14. Determination of Gypsum requirement of Soil
15. Preparation of Soil test report, Interpretation of result and Fertilizer recommendation
16. Preparation of Soil test summaries and Fertility maps
17. Preparation of Soil Health Card
18. Use of various Soil testing kits and working of Mobile soil testing van







**GOVERNOR**

**DR. D. M. GAWAI**

Principal

Science College, Nanded

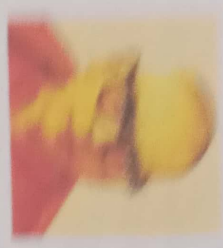
**COURSE COORDINATOR**

**MR. KANIK K. JADHAV**

Assistant Professor

Department of Chemistry, Analytical

Chemistry, Agrochemicals and Fertilizers



**Patrons:**

Hon. Dr. Manjappa R. Kabde

President,

Nanded Education Society, Nanded

Hon. CA Dr. Pravin Patil

Vice President,

Nanded Education Society, Nanded

Hon. Mrs. Shyamal D. Patki

Secretary,

Nanded Education Society,

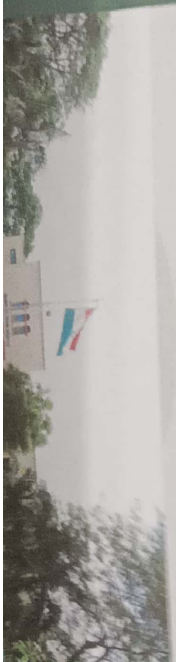
Nanded

Hon. Ad. Praful Agrawal

Joint Secretary,

Nanded Education Society,

Nanded



Nanded Education Society  
**Science College, Nanded**

Ph: 02462-290-469, 313-696

[www.sciencecollege.nanded.org](http://www.sciencecollege.nanded.org)



**CERTIFICATE COURSE**

in

**“Soil Testing and  
Nutrient Analysis”**

*Organized by*

**Department of Chemistry, Analytical**

**Chemistry, Agrochemicals and**

**Fertilizers**

**Science College, Nanded**

**2022-23**



NANDED EDUCATION SOCIETY'S  
**SCIENCE COLLEGE, NANDED**

(Affiliated to Swami RamanandTeerthMarathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**CERTIFICATE COURSE**

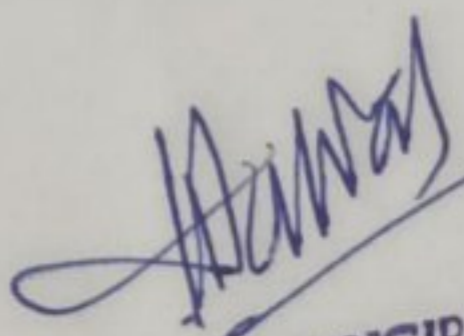
IN  
**Advanced Database Administration Using  
SQL**

(Structured Query Language)

ORGANIZED BY  
**DEPARTMENT OF COMPUTER SCIENCE**

**Science College, Nanded**

**2021-22**

  
PRINCIPAL  
P. S. Science College, Nanded

## OBJECTIVES OF THE CERTIFICATE COURSE:

- Learn concepts of structured and unstructured DATABASE.
- Learn concepts of structured and unstructured DATABASE.
- MongoDB
- Be able to write data retrieval queries and evaluate the result set.
- Be able to write queries that edit existing data.
- Be able to write queries and statements that create database objects.
- Understand the structure and design of structured and unstructured databases.
- Understand the importance and major issues of database security and the maintenance of data integrity.

## COURSE OUTCOME:

- Students will acquire the basic knowledge about RDBMS
- Able to write themselves SQL queries
- Able to retrieve records for database
- Acquire knowledge about DDL
- Fit for SQL developer Job
- Students will get prepare for DBA

## ORDINANCES FOR CERTIFICATE COURSE:



# COURSE STRUCTURE

**Subject: Advanced Database Management**

**Title of Course: Advanced Database Administration Using SQL:**

**Marks - 100**

**Hours - 90**

**Duration: 3 Months**

## Syllabus of the Course

### **Chapter 1: Database Architecture**

**20 Theory**

**1.1 Introduction to client-server Database Model: Two-Tier Client server model, Three-Tier Client server model.**

**1.2 Concurrency Control Techniques: Concurrency control protocols: Locked Based protocols, granting of locks, Two Phase Locking protocol.**

**1.3 Introduction to parallel databases: Parallel database system architecture, Types of parallelism, Parallel Database Implementation.**

**1.4 Introduction to distributed databases: Distributed database system architecture, Benefits of distributed database system, Issues with distributed database systems.**

### **Chapter 2: Object Based Databases and XML**

**18 Theory**

**2.1 Object Based Databases overview 2.2 Complex data types**

**2.3 Structured types and inheritance in SC 2.4 Table inheritance**

**2.5 Array and multiset types in SQL 2.6 Object identity (OI) and reference types in SQL**

**2.7 XML: Introduction, structure of XML data, XML document schema Xpath,**

**XQuery: FLOWER Expressions, Joins, Nested Queries, Sorting, functions, Functions and types**

### **Chapter 3: Advanced Database Techniques**

**18 Theory**



3.2 NoSQL database concepts: Types of NoSQL databases, NoSQL data modeling, Benefits of NoSQL, comparison between SQL and NoSQL database system.

3.3 NoSQL using MongoDB: Introduction to MongoDB Shell, Running the MongoDB shell, MongoDB client, Basic operations with MongoDB shell, Basic Data Types, Arrays, Embedded Documents

3.4 Querying with MongoDB: find() function, specifying which keys to return, query criteria, OR queries, Types specific querying

3.5 Aggregation Introduction: Aggregation Pipeline, Aggregation using Map reduce, Single purpose aggregation

#### **Chapter 4: Advances in database**

**17 Theory**

4.1 Introduction to Data Warehouse :Characteristics, Types of Data Warehouse Architecture, Data Marts, Data Warehousing Lifecycle, Data Warehouse Development

4.2 Introduction to Data Mining Techniques: Data mining technology and its relation to data warehousing, Association rules, classification and clustering, Applications of data mining.

4.3 Introduction to business Intelligence: Features, frameworks, Types and approaches for machine learning

4.4 Introduction to Multimedia Databases, Mobile Databases and digital databases

#### **Chapter 5: Big data management**

**17 Theory**

5.1 Big Data

5.2 Introduction to Hadoop: Building Blocks and Components, Hadoop architecture, HBase, HIVE, Solid-State Drive

5.3 Cloudera, Oracle cloud, 5.4 Introduction to R-programming



**Thirty-Day Online Course**

**on**

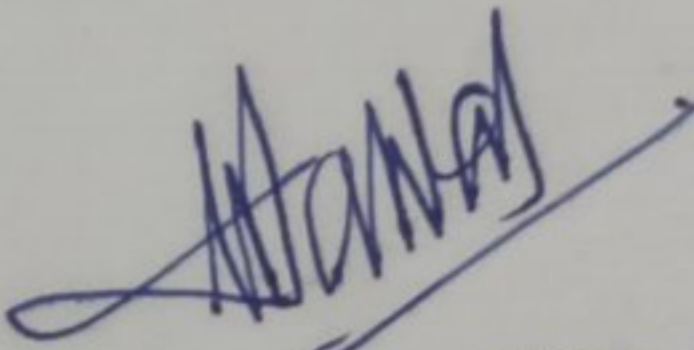
**“Python Programming for Beginners”**

**18<sup>th</sup> January 2022**

**Organized by**

**Department of Computer Science**

**N.E.S. Science College, Nanded 431605**

  
PRINCIPAL  
N. E. S. Science College, Nanded

## Call for Participation

The teachers of computer science department have shared the Google form link of registration to all M.Sc and B.Sc. students of computer faculty. They also provided information about course duration and registration process through WhatsApp group. The course is conducted totally Online mode using Teachmint App. Student get enrolled in the course using the link which is given in WhatsApp group. Also shared the brochure with all Computer teachers in the department.

## Message circulated among the participants for registration

Greeting from science college, Nanded, Maharashtra

\*\*\*\*\*

Nanded Education Society

SCIENCE COLLEGE, NANDED

Department of Computer Science

Organized an 30 days Online Certificate Course

“Python Programming for Beginners”

Duration 18/01/2022 To 17/02/2022

Time: 5:00pm To 6:00pm

Resource Person: Dr. Sangita S.Modi

Kindly install teachmint application on your mobile for daily online class. I will send link of teachmint app then join the class

You have been invited by DR. Modi S. to join classroom Python Programming

Enroll to Teachmint using:

<https://www.teachmint.com/enroll/430247323/61b022cf367113c480a580b8>

Classroom ID: 430247323

Subject: python programming









Python Arrays — Create, Reverse, Pop with Python Array Examples

**C. Python Conditional Loops**

**5 hours**

Lesson 1

Python Conditional Statements — IF...Else, ELIF & Switch Case

Lesson 2

Python For & While Loops — Enumerate, Break, Continue Statement

Lesson 3

Python break, continue, pass statements — Learn with Example

**D. Python Strings**

**5 hour**

Lesson 1

Python Strings — Replace, Join, Split, Reverse, Uppercase & Lowercase

Lesson 2

Python String strip() Function — What is, Examples of strip() Function

Lesson 3

Python String count() — Python String count() Method with Examples

Lesson 4

Python String format() — What is, How works & Examples

Lesson 5

Python String len() Method — Python string length | len() method Example

Lesson 6

Python String find() Method — Python string. find() Method With Examples

**E. Python Function**

**10 hours**

Lesson 1

Python Main Function & Method Example — Understand `__main__`

Lesson 2

Python Functions Examples — Call, Indentation, Arguments & Return Values

Lesson 3



Lambda Functions in Python — Python Lambda Functions with EXAMPLES

Lesson 4

Python abs() Function — Absolute Value Examples

Lesson 5

Python round() Function — What is the round() function in Python?

Lesson 6

Python range() Function — Float, List, For loop Examples

Lesson 7

Python map() Function — What is the map() function in Python? (With Examples)

Lesson 8

Python Timeit() with Examples — What is Python Timeit()?

Lesson 9

Yield in Python Tutorial — Generator & Yield vs Return Example

Lesson 10

Python Queue — FIFO, LIFO Example

Lesson 11

Python Counter in Collections — Use & Examples

**Advance python**

**F. Object oriented programming**

**5 hours**

Lesson 1

**Python OOPs — Class, Object, Inheritance and Constructor with Example**



**Report of**

**Two Month Certificate Course**

**on**

**“Advanced Python Programming”**

**20<sup>th</sup> July- 20<sup>th</sup> September 2022**

**Organized by**

**Department of Computer Science**

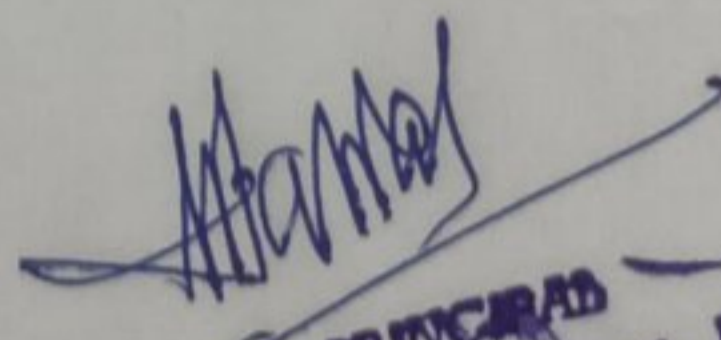
**N.E.S. Science College, Nanded 431605**

**Tel: 02462-251648**

**Fax No: 02462-250465**

**[www.sciencecollegennd.org](http://www.sciencecollegennd.org)**

**[principal@sciencecollegennd.org](mailto:principal@sciencecollegennd.org)**

  
**PRINCIPAL**  
N.E.S. Science College, Nanded

## Call for Students

Message circulated among the participants for registration

Greeting from science college, Nanded, Maharashtra

\*\*\*\*\*

Nanded Education Society

SCIENCE COLLEGE, NANDED

Department of Computer Science

Organized 60 days Certificate Course

In

**Advanced Python Programming**

Duration 20/07/2022 To 20/09/2022

Time: 3:00pm To 5:00pm

Resource Person: Dr. Sangita S.Modi

Subject: python



# Syllabus of Certificate Course & Duration

**N.E.S. Science College, Nanded**

**Department of Computer Science**

Course Name: Certificate Course on

Advanced Python Programming

Course Duration: 60 days Time: 2 hour/day

Syllabus of Certificate Course & Duration

Unit I:

## **1. Python Introduction and Installation 5 hours**

Install Python IDE — How to Install Python on Windows [Pycharm IDE] Python Hello World — Create Your First Python Program

Python print () Function — How to Print in Python with Examples

Python Variables — How to Define/Declare String Variable Types

## **2. Python Data Structure 5 hours**

Python TUPLE — Pack, Unpack, Compare, Slicing, Delete, Key

Python Dictionary (Dict) — Update, Cmp, Len, Sort, Copy, Items, str  
Example Python Dictionary Append — How to Add Key/Value Pair

Python Operators — Arithmetic, Logical, Comparison, Assignment, Bitwise &

Precedence Python Arrays — Create, Reverse, Pop with Python Array Examples **Unit II:**

## **1. Python Conditional Loops 5 hours**

Python Conditional Statements — IF...Else, ELIF & Switch Case

Python For & While Loops — Enumerate, Break, Continue

Statement Python break, continue, pass statements — Learn with Example

## **2. Python Strings 5 hour**



Python Strings — Replace, Join, Split, Reverse, Uppercase & Lowercase

Python String Function,

### **3. Python Function 10 hours**

Python Main Function & Method Example — Understand `__main__`

Python Functions Examples — Call, Indentation, Arguments & Return Values Lambda Functions in Python — Python Lambda Functions with EXAMPLES Python built in Function

### **Unit III: Advance python**

#### **1. Object oriented programming 10 hours**

**1.1 Python OOPs** — Class, Object, Inheritance and Constructor, abstract class with Example

**1.2 File handling in python 5 hours**

**1.3 Python Exception Handling** — Try, Catch, Finally

**1.4 Python readline() Method** — What is Python readline? (With Examples)

### **Unit IV:**

#### **GUI based python 15 hours**

Tkinter , Why Tkinter, Our first Tkinter GUI, Tkinter Widgets and Attributes

Label, Geometry, Maxsize & Minimize, Displaying images Using Label, Attributes of Label and Pack

Creating Newspaper GUI, Frame in Tkinter, Packing Buttons in Tkinter, Entry Widget & Grid Layout in Tkinter , Travel from Using Checkbuttons & Entry Widget, Accepting User Input in Tkinter Form

Canvas Widget in Python Tkinter , Handling Events In Tkinter GUI, Menus and Submenus in Tkinter Python, Message Box in Tkinter Python, Sliders in Tkinter Using Scale(), Creating RadioButtons in Tkinter, ListBox in Tkinter, ScrollBar in Tkinter GUI, Status Bar in Tkinter, Using Classes and Objects to Create GUIs, More Tkinter Tips, Tricks, and Functions



**Sixty-Day Course**

**on**

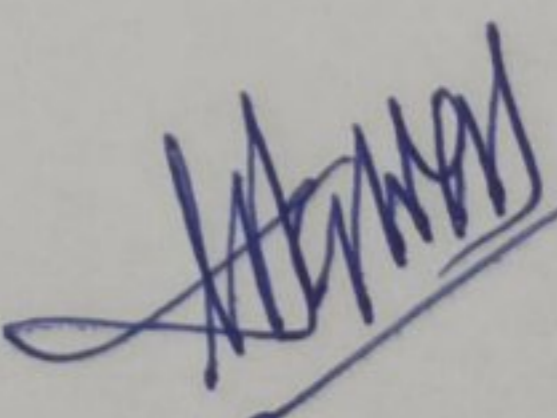
**“Programming in Python Basic to Advance”**

**24<sup>th</sup> March to 24<sup>th</sup> May 2022**

**Organized by**

**Department of Computer Science**

**N.E.S. Science College, Nanded 431605**

  
**PRINCIPAL**  
**N. E. S. Science College, Nanded**



## Call for Participation

### Message circulated among the participants for registration

Greeting from science college, Nanded, Maharashtra

\*\*\*\*\*

Nanded Education Society

SCIENCE COLLEGE, NANDED

Department of Computer Science

Organized an 60 days Certificate Course

“Advanced Python Programming”

Duration 24/03/2022 To 24/05/2022

Time: 8:00am To 10:00am

Resource Person: Dr. Sangita S.Modi

Subject: Programming in Python Basic to Advance

Fees:2000/-



# Syllabus of Certificate Course & Duration

**N.E.S. Science College, Nanded**

**Department of Computer Science**

Course Name: Certificate Course on

Programming in Python Basic to Advance

Course Duration: 60 days Time: 2 hour/day

Syllabus of Certificate Course & Duration

**Unit I:**

## **1. Python Introduction and Installation 5 hours**

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IDE] Python Hello World — Create Your First Python Program

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Python Variables — How to Define/Declare String Variable Types

## **2. Python Data Structure 5 hours**

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Python String Function,

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Python Main Function & Method Example — Understand `__main__`

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Canvas Widget in Python Tkinter , Handling Events In Tkinter GUI, Menus and Submenus in Tkinter Python, Message Box in Tkinter Python, Sliders in Tkinter Using `Scale()`, Creating RadioButtons in Tkinter, ListBox in Tkinter, ScrollBar in Tkinter GUI, Status Bar in Tkinter, Using Classes and Objects to Create GUIs, More Tkinter Tips, Tricks, and Functions





**NANDED EDUCATION SOCIETY'S  
SCIENCE COLLEGE, NANDED**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**CERTIFICATE COURSE**

**IN  
SQL**

(Structured Query Language)

**ORGANIZED BY**

**DEPARTMENT OF COMPUTER SCIENCE**

**Science College, Nanded**

**2022-23**

## OBJECTIVES OF THE CERTIFICATE COURSE:

- Learn fundamental concepts of DATABASE & RDBMS.
- Learn structured query language (SQL) to an intermediate level
- Be able to write data retrieval queries and evaluate the result set.
- Be able to write SQL statements that edit existing data.
- Be able to write SQL statements that create database objects.
- Understand the structure and design of relational databases.
- Understand the importance and major issues of database security and the maintenance of data integrity.

## COURSE OUTCOME:

- Students will acquire the basic knowledge about RDBMS
- Able to write themselves SQL queries
- Able to retrieve records for database
- Acquire knowledge about DDL
- Fit for SQL developer Job
- Students will get prepare for DBA

## ORDINANCES FOR CERTIFICATE COURSE:

The Certificate Course **Certificate Course in SQL** started with keeping view of “Career Oriented Certificate Course” will be covered under following ordinances.

1. Number of Students per batch are 20.



# COURSE STRUCTURE

Subject: **SQL**

Title of Course: **Certificate Course in SQL:**

Marks - **100**

Hours - **90**

Duration: **3 Months**

## Syllabus of the Course

### Chapter 1: Introduction to SQL

05 Theory

1. Introduction Database
2. Understanding DBMS vs RDBMS
3. Sub languages of SQL
4. Various versions of Oracle
5. Installation of 9i
6. About SQL\*Plus and use of developer tool
7. Datatypes in Oracle
8. Operators in Oracle
9. Understanding Schema design and objects

### Chapter 2: Data Retrieval Techniques

6 practical

1. How to use select statement in different ways to retrieve records?
2. Working with Column alias
3. Working with Table alias
4. Data filtering and sorting with in single table
5. Clauses and its types in oracle

- Where clause
- Having clause
- From clause
- Group by clause
- Order by clause
- Using clause
- Constraint clause
- For update clause

### Chapter 3: Working With DDL Commands

7 practicals

1. Table creation using CREATE statement
2. Creating table from another table
3. Dropping a table using DROP command
4. Altering the column of a table
5. Modifying the column datatype in a table



6. Renaming the column of a table
7. Renaming an entire table
8. Using truncate command
9. Difference between Delete and Truncate command

#### **Chapter 4: Working with DML Commands**

6 practical

1. How to copy data from one table to another table?
2. How to copy the structure alone from a table?
3. Different types of inserting row to an existing table
4. Updating any value of with in a record using UPDATE command
5. Deleting a particular record from a table
6. Using merge & insert all command

#### **Chapter 5: Integrity Constraints**

6 practical

1. How to declare column level constraints?
2. How to declare row level constraints?
3. How to add constraints to an existing table?
4. Types of integrity constraints
  - Not null
  - Unique key
  - Primary key
  - Referential integrity
  - Check integrity
5. How to enable and disable constraints?
6. How to get information about constraints?

#### **Chapter 6: Built In Functions**

4 practical

1. Understanding Single row functions
2. How to use single row functions using dummy table?
3. Types of single row functions
  - String functions
  - Date functions
  - Mathematical functions
  - Conversion functions
  - Special functions
  - Analytical functions

#### **Chapter 7: Data Aggregation**

6 practical

1. Working with aggregate function
  - Count()
  - Sum()
  - Max()
  - Min()



- Avg()
- 2. Working with group by clause
- 3. Working with having clause
- 4. Difference between WHERE and HAVING clause

### **Chapter 8: Importance Of JOIN**

7 practical

1. Understanding joins and its uses
2. Types of joins

- Equi join
- Non – equi join
- Self join
- Outer join
- Left & Right outer join
- Full outer join
- Cross join

### **Chapter 9: Set Operators And Pseudo Columns:**

6 practical

1. How to use set operators in a single table content?
2. Working with set operator types
  - UNION
  - UNION ALL
  - INTERSECT
  - MINUS

### **Chapter 10: Sub Queries**

5 practical

1. Importance of sub queries
2. Using different types of sub queries

- Single row sub queries
- Multi row sub queries
- Nested queries
- Multi column sub queries
- Correlated sub queries

### **Chapter 11: Database Transaction and Security**

7 practical

1. Working with data query language using TCL
2. Working with data control language commands
3. Use of commit and rollback
4. Use of savepoint and set transaction
5. How to give system privileges to an user?
6. How to invoke and revoke object privileges?
7. How to create users and roles?

### **Chapter 12: Design Of Schema Objects**

5 practical





1. Creating and working with Views
2. Working with Synonyms
3. Creating Index and clusters
4. Working with in materialized view
5. Understanding sequences and its types



**Report of**

**Two Month Certificate Course**

**on**

**“Advanced Python Programming”**

**1<sup>st</sup> January – 1<sup>st</sup> March 2023**

**Organized by**

**Department of Computer Science**

**N.E.S. Science College, Nanded 431605**

**Tel: 02462-251648**

**Fax No: 02462-250465**

**[www.sciencecollegennd.org](http://www.sciencecollegennd.org)**

**[principal@sciencecollegennd.org](mailto:principal@sciencecollegennd.org)**

## Call for Students

**Message circulated among the participants for registration**

Greeting from science college, Nanded, Maharashtra

\*\*\*\*\*

Nanded Education Society

SCIENCE COLLEGE, NANDED

Department of Computer Science

Organized 60 days Certificate Course

In

**Advanced Python Programming**

Duration 01/01/2023 to 1/03/2023

Time: 3:00pm To 5:00pm

Resource Person: Dr. Sangita S.Modi

Subject: python

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# Syllabus of Certificate Course & Duration

**N.E.S. Science College, Nanded**

**Department of Computer Science**

Course Name: Certificate Course on

Advanced Python Programming

Course Duration: 60 days Time: 2 hour/day

Syllabus of Certificate Course & Duration

**Unit I:**

## **1. Python Introduction and Installation 5 hours**

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python String Function,

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**CERTIFICATE COURSE**

IN

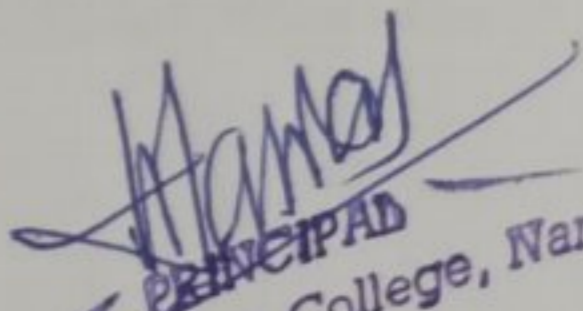
**OFFICE AUTOMATION AND DATA  
ANALYSIS**

ORGANIZED BY

**Department Of Computer Science**

Science College, Nanded

2022-23

  
PRINCIPAL  
V. E. S. Science College, Nanded

## OBJECTIVES OF THE CERTIFICATE COURSE

- This Course is designed to aim at imparting a basic level appreciation program for College Students.
- It also aims to develop Computer based Skill to apply it in day-to-day life.
- It Intends to make the students skilled and professional using Internet and Web Technology.
- It adds the knowledge of basics of Software Installation and PC maintenance.

## COURSE OUTCOME

- Basic Understanding of Computer Hardware and Software.
- Literates the students to use Computers in day-to-day life.
- Develops the Skill and enhance the knowledge in Web Technology.
- It train the students of Data Representation and Data Analysis
- Acquires the Knowledge of Data Analysis using MS-Excel.
- Makes the effective presentations.
- Computer Installation and PC Maintenance.





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- Makes the effective presentations.
- Computer Installation and PC Maintenance.



## COURSE CONTENTS

### 1. Basics of Computer

05 Hrs

What is Computer, Basic Applications of Computer, Components of Computer System, Central Processing Unit, Keyboard, mouse and VDU, Other Input devices, Other Output devices, Computer Memory, Concept of Hardware and Software, Application Software, Systems Software.

### 2. Working with Operating System

15 Hrs

Basics of Operating System, Operating system, Basics of popular operating system (LINUX, WINDOWS), The User Interface, Task Bar, Icons, Menu, Running an Application, Operating System Simple Setting, Changing System Date and Time, Changing Display Properties, To Add or remove Windows Component, Changing Mouse Properties, Adding and removing Printers, File and Directory Management, Creating and renaming of files and directories, Common utilities

### 3. Word Processing using MS-Word

20 Hrs

Word Processing Basics, Opening Word Processing Package, Menu Bar, Icons Below Menu Bar, Opening and closing Documents: Opening Documents, Save and Save as, Page Setup, Print Preview, Printing of Documents, Text Creation and manipulation, Document Creation, Editing Text, Text Selection, Cut, Copy and Paste, Spell check, Thesaurus, Formatting the Text Font and Size selection, Alignment of Text, Paragraph Indenting, Bullets and Numbering Changing case, Table Manipulation, Draw Table, Changing cell width and height, Alignment of Text in cell, Delete / Insertion of row and column, Border and shading.



#### **4. Data Handling using MS-Excel**

**20 Hrs**

Opening of Spread Sheet, Addressing of Cells, Printing of Spread Sheet, Saving Workbooks, Manipulation of Cells, Entering Text, Numbers and Dates, Creating Text, Number and Date Series, Editing Worksheet Data, Inserting and Deleting Rows, Column, Changing Cell Height and Width, Formulas and Function, Using Formulas, Function, Advance tools for Data Analysis.

#### **5. Presentation using Power point**

**10 Hrs**

Basics, Opening A PowerPoint Presentation, Saving A Presentation, Creation of Presentation, Creating a Presentation Using a Template, Creating a Blank Presentation, Entering and Editing Text, Inserting And Deleting Slides in a Presentation, Preparation of Slides, Inserting Word Table or An Excel Worksheet, Adding Clip Art Pictures, Inserting Other Objects, Resizing and Scaling an Object, Presentation of Slides, Viewing A Presentation, Choosing a Set Up for Presentation, Printing Slides And Handouts, Slide Show, Running a Slide Show, Transition and Slide Timings, Automating a Slide Show

#### **6. Internet and Web Browsing**

**10 Hrs**

Basic of Computer Networks, Local Area Network (LAN), Wide Area Network (WAN), Internet Concept of Internet, Applications of Internet, connecting to the Internet, Troubleshooting World Wide Web (WWW), Web Browsing Software, Popular Web Browsing Software Search Engines, Popular Search Engines / Search for content, Accessing Web Browser, Using Favourites Folder, Downloading Web Pages, Printing Web Pages, Understanding URL, Surfing the web, Using e-governance website



**7. Handling Email and Social Apps.**

**05 Hrs**

Basics of E-mail, what is an Electronic Mail, Email Addressing, Using E-mails, Opening Email account, Mailbox: Inbox and Outbox, Creating and Sending a new E-mail, replying to an E-mail message, Forwarding an E-mail message, Sorting and Searching emails, Document collaboration, Instant Messaging and Collaboration, Using Instant messaging, Instant messaging providers, Netiquettes

**8. PC Maintenance**

**05 Hrs**

Computer Assembly, Installation of Operating System, Installation of New devices, Basic Troubleshooting.



**7. Handling Email and Social Apps.**

**05 Hrs**

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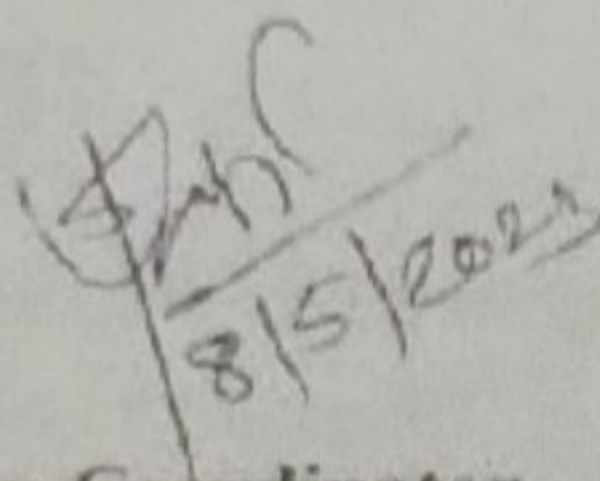
Computer Assembly, Installation of Operating System, Installation of New devices, Basic Troubleshooting.



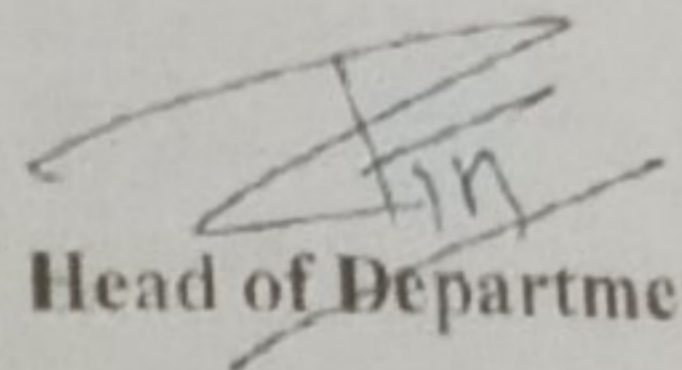
**NES Science College Nanded  
Department of Computer Science  
OADA Certification Course**

Important Notice

All the students of OADA certification course are here by informed that their certificate course exam is scheduled on **10/05/2023** at **11.00 AM**. Students must be present for the exam in Computer Lab in scheduled time.

  
8/5/2023

**Exam Coordinator  
(Dr. U.S. Patki)**



**Head of Department  
(Dr. R.A. Muneshwar)**  
Assistant Professor & IJC Head  
Dept. of Statistics Computer Science & IT  
N.E.S. Science College, Nanded



**Report of**

**Two Month Certificate Course**

**on**

**“Object Oriented Concept with Python Programming”**

**1<sup>st</sup> July – 1<sup>st</sup> September 2023**

**Organized by**

**Department of Computer Science**

**N.E.S. Science College, Nanded 431605**

**Tel: 02462-251648**

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**[www.sciencecollegennd.org](http://www.sciencecollegennd.org)**

**[principal@sciencecollegennd.org](mailto:principal@sciencecollegennd.org)**

## Syllabus of Certificate Course & Duration

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**Department of Computer Science**

Course Name: Certificate Course on

Advanced Python Programming

Course Duration: 60 days Time: 2 hour/day

Syllabus of Certificate Course & Duration

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Python Exception Handling — Try, Catch, Finally

Python `readline()` Method — What is Python `readline()`? (With Examples)



A Report

on



One Month Certificate Course

in

“Employment Communication Skills Using Language Lab”

Academic Year 2022-2023

Duration of the Course

17/05/2022-25/07/2022

Department of English

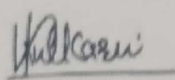
N. E. S. Science College, Nanded

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(Reaccredited with “A” grade by NAAC with (CGPA 3.38) 3<sup>rd</sup> Cycle, CPE Status, DST-FIST,  
Best College Award (SRTMUN) NIRF 72<sup>nd</sup> Ranking (Year-2017)  
Website: <http://www.sciencecollegenanded.org/>


PRINCIPAL  
N. E. S. Science College, Nanded

## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of the Course	Certificate Course in Employment Communication Skills Using Language Lab
2.	Eligibility for Admission	Candidate who passed 10+2 examination with at least 55% marks in aggregate in Science
3.	Passing Marks	The candidate must obtain 35% of the total marks in theory and practical separately to pass the course
4.	No. of Years/ Semester	One month
5.	Level	College
6.	Pattern	Semester
7.	To be implemented from the Academic Year	From Academic year 2022-23

  
Course Coordinator  
**Dr. Vibhati V. Kulkarni**



  
Principal  
**Dr. D. U. Gawai**  
PRINCIPAL  
Science College, Nanded

Date:

## Notice

All the students those are enrolled for the two Month Certificate course, "Employment Communication Skills Using Language Lab", are here by informed that the course has been start as per schedule. Kindly attend the course regularly. The duration of course is of two months.

Course Coordinator



Principal

Dr. D.U. Gawai

**PRINCIPAL**  
Science College, Nanded

## **PREAMBLE:**

- The students' employment should be the ultimate goal of their education. The ability to communicate effectively is crucial for students to secure decent jobs. In order to enhance the students' communication abilities, Science College, Sneh Nagar, Nanded regularly holds workshops, seminars, guest lectures, mock interviews, debate competitions, essay and poem writing competitions, poster presentation competitions, etc. The English Department started offering a Certificate Course in "Employment Communication Skills Using Language Lab" in 2022 to prepare students for the problems of finding employment. The language lab is well-equipped and features an upgraded version of Orell Software.

## **OBJECTIVES OF THE CERTIFICATE COURSE:**

- To develop communication skills of the students required for getting the job.
- To improve reading, writing, speaking and listening skills of the students so they can be successful in their professional career.
- To build up confidence in students to face interviews successfully.
- To foster creative skills among the students.



## COURSE OUTCOME:

- Students will learn to communicate in English.
- Student will be able to face interviews to get job.
- Students will try to acquire the soft skills.

## ORDINANCES FOR CERTIFICATE COURSE:

- The Certificate Course in Certificate Course in **Employment Communication Skills Using Language Lab** started with keeping view of 'Career Oriented Certificate Course' will follow ordinances.
- Number of Students per batch are 20.
- The admission/ examination shall be given to any candidate who has passed 10+2 examination with at least 45% marks in aggregate in Science.
- The candidate after passing examination will be awarded a Certificate for the Course.
- Every candidate will require attending minimum of 75% lectures / periods delivered in the class.
- The candidate must obtain 35% of the total marks in theory and practical separately to pass the course.
- Candidates will be offered English as the medium of Instructions/ Examination.



## SYLLABUS OF THE COURSE

**TITLE OF COURSE: Certificate Course in Employment  
Communication Skills Using Language Lab**

**Course will be of 04 Credits; each Credit will have 15 hours.**

Unit	Topic	Credit
I	English Employment Communication: Primary Level	I
II	English Employment Communication: Intermediate Level	I
III	English Employment Communication: Advanced Level	I
	<b>Practical</b>	<b>I</b>
	<b>Total</b>	<b>IV Credit</b>



# Brochure



### Convener

**Dr. D. U. Gawal**

Principal

Science College, Nanded

Course Coordinator

**Dr. Mrs. Vibhali V. Kulkarni**

Head, Department of English  
Science College, Nanded



### Patrons:

**Hon. Dr. Venkatesh R. Kabde**  
President,  
Nanded Education Society, Nanded

**Hon. CA Dr. Pravin Patil**  
Vice President,  
Nanded Education  
Society, Nanded

**Hon. Mrs. Shyamal D. Patki**  
Secretary,  
Nanded Education Society,  
Nanded

**Hon. Ad. Praful Agrawal**  
Joint Secretary,  
Nanded Education Society,  
Nanded



Nanded Education Society's  
**Science College, Nanded**

Tel: 02462 294 401, 291 854  
www.sciencecollegenananded.org



## CERTIFICATE COURSE

in

**"Employment  
Communication Skills Using  
Language Lab"**

organized by

**DEPARTMENT OF ENGLISH  
Science College, Nanded  
2022-23**

## PREAMBLE

The students' employment should be the ultimate goal of their education. The ability to communicate effectively is crucial for students to secure decent jobs. In order to enhance the students' communication abilities, Science College, Inesh Nagar, Nanded regularly holds workshops, seminars, guest lectures, mock interviews, debate competitions, essay and poem writing competitions, poster presentation competitions, etc. The English Department started offering a Certificate Course in "Employment Communication Skills Using Language Lab" in 2021 to prepare students for the problems of finding employment. The language lab is well equipped and features an upgraded version of Oris software.

## About College

N.E.S. Science College, Nanded is the oldest single faculty Science College, founded by a great visionary and leader of Hyderabad liberation struggle, Pooja Swami Ramanand Tripathi. College is accredited with 'A' grade by NAAC with CGPA 3.38 in 2nd Cycle, NIRF rank- 72 in 2017, CPE Status, Dist- FST, Best College, award by SRTMUN in 2018 and also awarded with "College with Potential for Excellence (CPE)" by UGC.

## COURSE OUTCOME:

- Students will learn to communicate in English.
- Student will be able to face interviews to get job.
- Students will try to acquire the soft skills.

## OBJECTIVES OF THE CERTIFICATE COURSE

- To develop communication skills of the students required for getting the job.
- To improve reading, writing, speaking and listening skills of the students so they can be successful in their professional career.
- To build up confidence in students to face interviews successfully.
- To foster creative skills among the students.

## ORDINANCES FOR CERTIFICATE COURSE

- The Certificate Course in Certificate Course in Employment Communication Skills Using Language Lab started with keeping view of Career Oriented Certificate Course and will follow ordinances:
  1. Number of Students per batch are 20.
  2. The admission examination shall be given to the candidates who has passed 10<sup>th</sup> examination with at least 45% marks in aggregate.
  3. The candidates after passing examination will be awarded a Certificate for the said Course.
  4. Every candidate will require attending minimum of 75% lectures / periods delivered in the class.
  5. The candidate must obtain 20% of the total marks in theory and practical separately to pass the course.
  6. Candidates will be offered English as the medium of instructional Examination.

## Modality of Assessment

Theory - 60 Marks  
Practical - 40 Marks  
Duration - The Examination shall be of 3 hours' duration.

## Theory question paper pattern

- 1) There shall be 3 questions, each of 20 marks. On Each Unit there will be 1 question
- 2) All questions shall be compulsory with internal choice within the question
- 3) Terms for Practical Examination

Sr. No.	Particulars	Marks
1	Practical Exam	25
2	Skill Acquired	10
3	Viva	05
4	Theory	60

## Rules of the course

- 1) The candidate require to attend 75% lectures/ periods
- 2) The Candidate must obtain 35% of the total marks in theory and practical
- 3) Candidate will be offered English/ Marathi as a Medium of Instructional Examination.

## Eligibility

- 12th Science Examination passed

## Training Duration

Training Duration: 30 Days (1 Month)  
Number of Seats: 20 Students per Batch  
Theory: 10 Lectures  
Practical: 20 Lectures





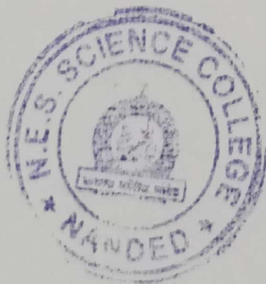


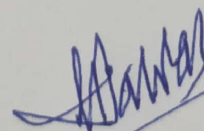
A Report  
on  
“One Month Certificate Course  
in  
English Communication”

**Nanded Education Society's  
N.E.S. SCIENCE COLLEGE,  
NANDED**

**Affiliated with S.R.T.M. University, Nanded**

**Re-accredited with 'A' Grade by NAAC with CPGA 3.38,  
CPE Status,  
Recipient of DST-FIST & Best College Award**



  
**PRINCIPAL**  
N.E.S. Science College, Nanded



NANDED EDUCATION SOCIETY'S

# SCIENCE COLLEGE, NANDED

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(He accredited with 'A' grade by NAAC (UPEA 0,20) B-Grade, CPE Status, DIST. FIRST)  
NIRE Ranking 13 (Year - 2017), Best College award (2018)

P.O.Box No. 62, Sneh Nagar, Nanded - 431605 (MS, India) P (O) 02462 251048 250465 Fax 02462 250465  
Email: principal@sciencecollegend.org, sciencecollege1935@gmail.com Web: www.sciencecollegend.org

Date: 12/04/2021

To,  
The Principal,  
Science College, Nanded

Subject: Request to sanction one month "Certificate Course in English Communication".

Respected Sir,

As mentioned above department of English is conducting one month certificate course in "English Communication" scheduled from D.20/04/2021-20/05/2021. I request you to permit for the same. The curriculum designed for the said course is attached herewith for your kind notice.

Thanking You,

*Sanctioned*  
*[Signature]*

PRINCIPAL  
N. B. S. Science College, Nanded

Yours Faithfully,

*[Signature]*

Dr. Vibhati Vasant Rao Kulkarni



## Certificate Course in English Communication

(D.20/4/21-20/5/21)

### Objectives:

- 1) To develop communication skills of the students required for getting the job.
- 2) To improve reading, writing, speaking and listening skills of the students so they can be successful in their professional career.

### Syllabus:

1. Ice Breaking.
2. Verbal Communication and Nonverbal Communication.
3. Presentations.
4. Common Errors in English.
5. Assignments for Vocabulary building in English.
6. Group Discussion.
7. Making Dialogues.
8. Mock Interview.
9. Elocution.
10. Role Plays.
11. Reading Comprehension.
12. Listening Comprehension.
13. Case Study.
14. Task based learning.
15. Learning by Teaching.
16. SQ3R reading Method.
17. News Reading.
18. Listening AND solving Problems.
19. Resume and Application Writing.
20. Narrating Pictures.
21. Tense and Uses, Phonetics.
22. Games.
23. Preparing Yearly Time Plan and explaining it.
24. Help others to resolve conflict.
25. Effective communication for motivating others.
26. My Passions and My Innovations.
27. Criticize a Movie.
28. Compare and Contrast Two Persons, Places, Things.
29. Grapevine Communication.
30. Creative Corner.
31. Exaggeration.
32. Explaining your Project.
33. Listening and Note Taking.





A Report

on



One Month Certificate Course

in

**“Language Soft Skills for Science Graduates”**

Academic Year 2023-2024

Duration of the Course

06/03/2024-10/04/2024

Department of English

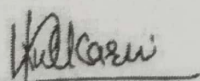
N. E. S. Science College, Nanded

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(Reaccredited with “A” grade by NAAC with (CGPA 3.38) 3<sup>rd</sup> Cycle, CPE Status, DST-FIST,  
Best College Award (SRTMUN) NIRF 72<sup>nd</sup> Ranking (Year-2017)  
Website: <http://www.sciencecollegenanded.org/>

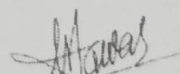
PRINCIPAL  
N. E. S. Science College, Nanded

## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of the Course	<b>Certificate Course in Employment Communication Skills Using Language Lab</b>
2.	Eligibility for Admission	<b>Candidate who passed 10+2 examination with at least 55% marks in aggregate in Science</b>
3.	Passing Marks	<b>The candidate must obtain 35% of the total marks in theory and practical separately to pass the course</b>
4.	No. of Years/ Semester	<b>One month</b>
5.	Level	<b>College</b>
6.	Pattern	<b>Semester</b>
7.	To be implemented from the Academic Year	<b>From Academic year 2023-24</b>



Course Coordinator  
**Dr. Vibhati V. Kulkarni**



Principal  
**Dr. D. U. Gawai**  
**PRINCIPAL**  
**Science College, Nanded**

Date: \_\_\_\_\_

## Notice

All the students those are enrolled for the two Month Certificate course, "One Month Certificate course in English Communication", are here by informed that the course has been start as per schedule. Kindly attend the course regularly. The duration of course is of two months.



Principal

Dr. D.U. Gawai

**PRINCIPAL**  
Science College Nanded

## **PREAMBLE:**

The students' employment should be the ultimate goal of their education. The ability to communicate effectively is crucial for students to secure decent jobs. In order to enhance the students' communication abilities, Science College, Sneh Nagar, Nanded regularly holds workshops, seminars, guest lectures, mock interviews, debate competitions, essay and poem writing competitions, poster presentation competitions, etc. The English Department started offering a Certificate Course in "Language Soft Skills For Science Graduates" in 2024 to prepare students for the problems of finding employment. The language lab is well-equipped and features an upgraded version of Orell Software.

## **OBJECTIVES OF THE CERTIFICATE COURSE:**

- To develop communication skills of the students required for getting the job.
- To improve reading, writing, speaking and listening skills of the students so they can be successful in their professional career.
- To build up confidence in students to face interviews successfully.
- To foster creative skills among the students.

## **COURSE OUTCOME:**

- Students will learn to communicate in English.
- Student will be able to face interviews to get job.
- Students will try to acquire the soft skills.

## SYLLABUS OF THE COURSE

**TITLE OF COURSE: Certificate Course in Employment  
Communication Skills Using Language Lab**

**Course will be of 04 Credits; each Credit will have 15 hours.**

<b>Unit</b>	<b>Topic</b>	<b>Credit</b>
<b>I</b>	English Employment Communication: Primary Level	<b>I</b>
<b>II</b>	English Employment Communication: Intermediate Level	<b>I</b>
<b>III</b>	English Employment Communication: Advanced Level	<b>I</b>
	<b>Practical</b>	<b>I</b>
	<b>Total</b>	<b>IV Credit</b>



# COURSE STRUCTURE

**Subject: English Department**

Title of Course: Certificate Course in "Language Soft Skills For Science Graduates"

Marks - 100

Hours - 30

Duration: 1 Month

## Syllabus of the Course

### **UNIT – I English Employment Communication: Primary Level**

1. Ice Breaking
2. Verbal Communication and Nonverbal Communication
3. Tense and Uses, Phonetics
4. Assignments for Vocabulary building in English
5. Compare and Contrast Two Persons, Places, Things
6. Common Errors in English
7. Making Dialogues
8. Reading Comprehension
9. Preparing Yearly Time Plan and Explaining it
10. Elocution

### **UNIT – II English Employment Communication: Intermediate Level**

11. Reading Comprehension
12. Listening Comprehension
13. Case Study
14. Task based learning
15. Learning by Teaching
16. SQ3R reading Method
17. News Reading
18. Listening AND solving Problems
19. Resume and Application Writing
20. Narrating Pictures

## UNIT-III English Employment Communication: Advanced Level

21. Help others to resolve conflict.
22. Group Discussion.
23. Effective communication for motivating others.
24. My Passions and My Innovations.
25. Criticize a Movie.
26. Mock Interview.
27. Creative Corner.
28. Exaggeration.
29. Explaining your Project.
30. Role Playing

### Practical

- **Language Lab Practical based on the theory**

### Modality of Assessment

- **Theory – 60 Marks**
- **Practical – 40 Marks**
- **Duration – The Examination shall be of 3 hours' duration.**



**NANDED EDUCATION SOCIETY'S  
SCIENCE COLLEGE, NANDED**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**PROPOSAL OF  
ONLINE CERTIFICATE  
COURSE  
IN  
"PISCICULTURE"**

**ORGANIZED BY  
DEPARTMENT OF ZOOLOGY  
Science College, Nanded.  
2022-23**

**PRINCIPAL**  
S. Science College, Nanded

## Modality of Assessment

Theory – 60 Marks

Practical – 40 Marks

Duration – The Examination shall be of 2 hours duration.

### MCQ question paper pattern

- 1) There shall be 60 questions each of One marks. On Each Unit there will be 20 question
- 2) All question shall be compulsory.
- 3) Terms for Practical Examination.

Sr. No.	Particulars	Marks
1)	Practical Exams	25
2)	Techniques	10
3)	Viva-voce	05

## Criteria of the course

- 1) Attendance 75% is required.
- 2) The Candidate must obtain 40% marks for certificate.
- 3) Medium of Instructions will be in English.

### Eligibility

12th Science Examination passed with Biology.

## Training Duration:

Training Duration:	90 Days (3 Months)
Practical:	15 Hours,
Theory :	45 Hours.
Minimum Qualification:	XIIth Sci. (Bio. Group)
Minimum Age:	18 Years
Number of Seats:	20 Student Per Batch
Batch Start:	Oct. 2022

## Patrons

**Dr. Venkatesh Kabde**

President, Nanded Education Society, Nanded

**CA. Dr. Pravin Patil**

Vice-President, Nanded Education Society, Nanded

**Sow. Shyamal Patki**

Secretary, Nanded Education Society, Nanded

**Adv. Prafulla Agrawal**

Joint-Secretary, Nanded Education Society, Nanded

## Organizing Committee:

**Chief Organizer :**

**Dr. D. U. Gawai, Principal**

**Course Coordinator :**

**Dr. K. S. Shillewar,**

Asst. Prof. & Head, Dept. of Fishery Science

**Course Co-Coordinator :**

**Dr. L. P. Shinde**

**Dr. Mrs. A. R. Shukla**

**Dr. V. R. Marathe**

**Dr. D. V. Totawar**

**Executive Committee:**

**Dr. A.T. Shinde**

**Mr. E.M. Khillare**

**Dr. S. R. Pingalkar**

**Dr. Mrs. V. V. Kulkarni**

**Dr. B.D. Gachande**

**Mrs. V.D. Borgaonkar**

**Dr. D.R. Munde**

**Dr. R.A. Muneshwar**

**Dr. A. P. Borikar**

**Dr. P.R. Kulkarni**

**: Contact :**

**Dr. K. S. Shillewar,**

Asst. Prof. & Head, Dept. of Zoology & Fishery Science

**N.E.S. SCIENCE COLLEGE, NANDED**

Email: drkirans08@gmail.com

Mob. No. 9552255288, 9423140557



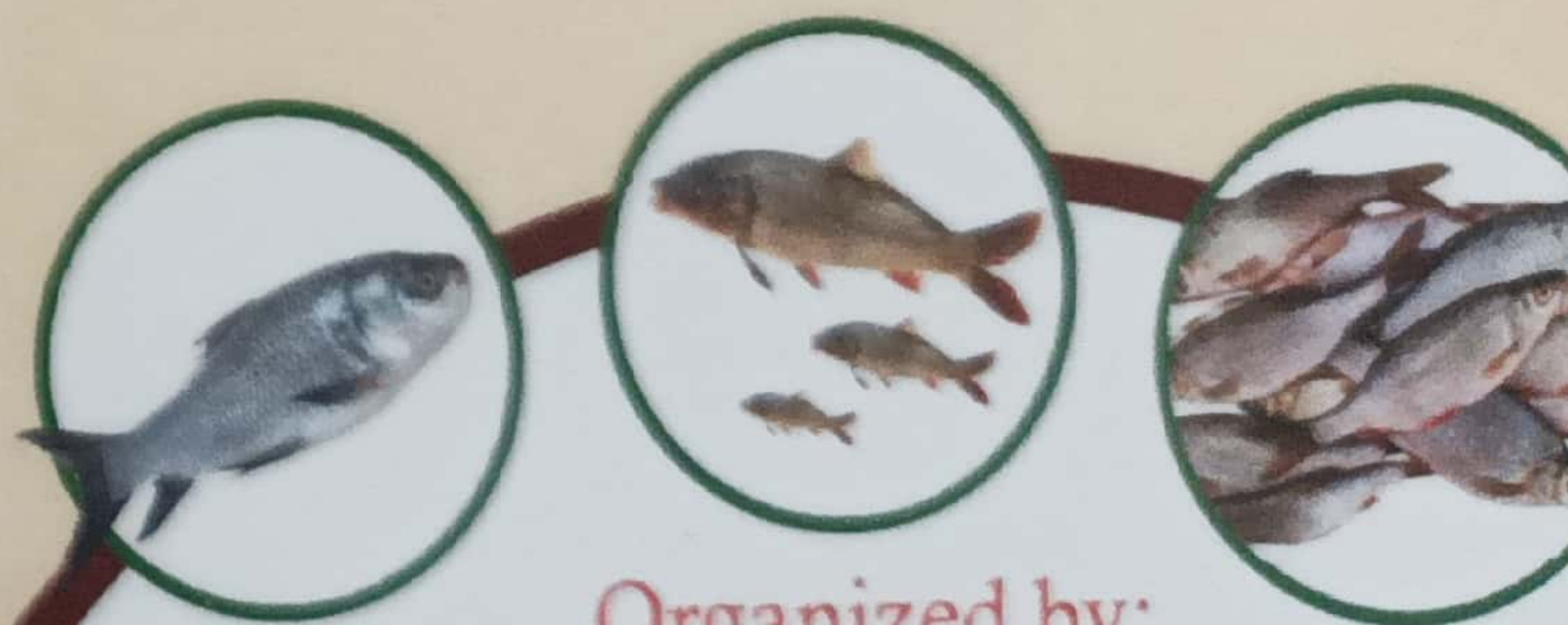
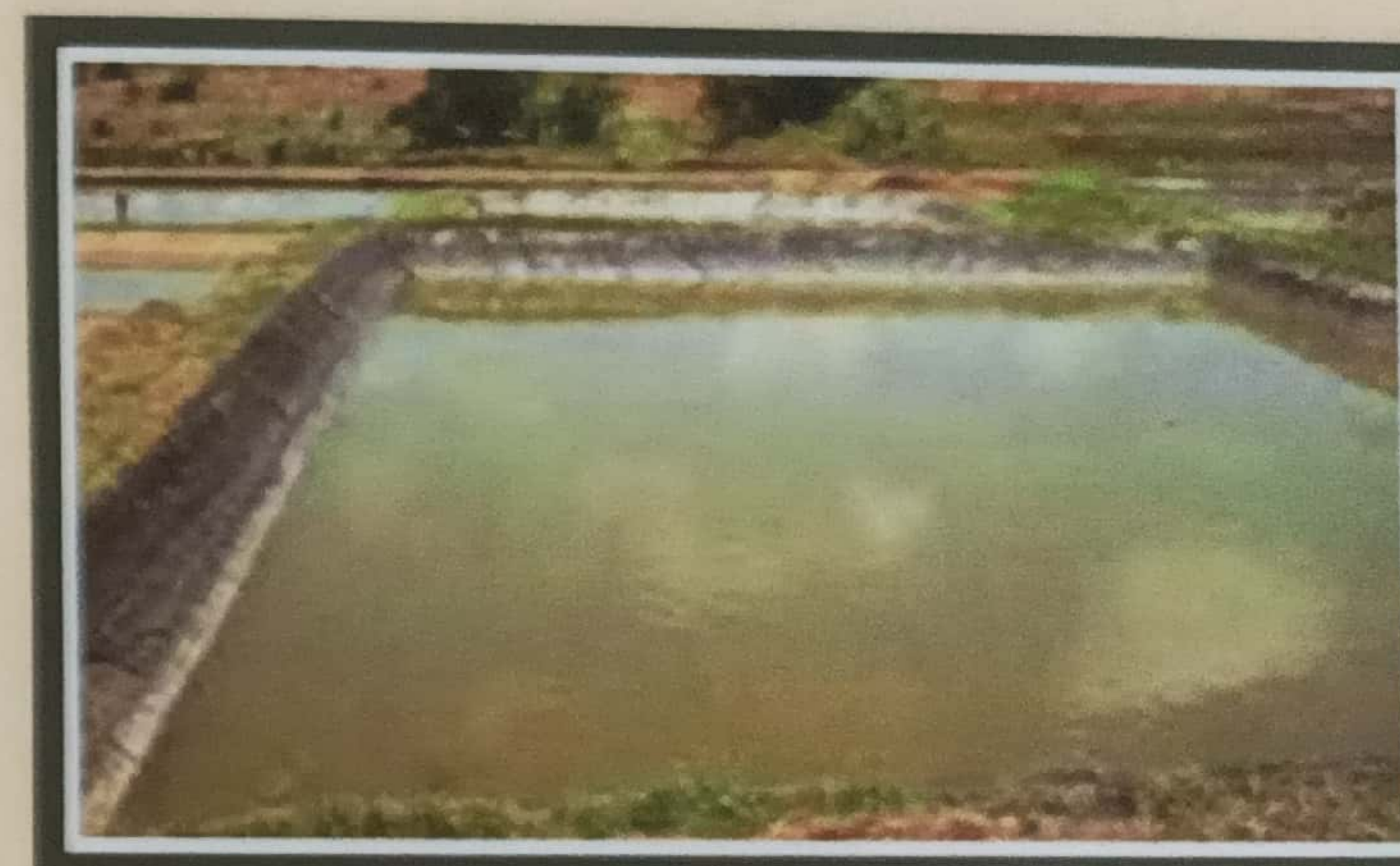
**NANDED EDUCATION SOCIETY'S  
SCIENCE COLLEGE, NANDED.**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(Re-accredited with "A" grade by NAAC with (CGPA 3.38) 3<sup>rd</sup> Cycle, CPE Status,  
DST - FIST, Best College, Award of SRTMUN)

Online / Offline

**CERTIFICATE COURSE IN  
"PISCICULTURE"**

Oct. 2022



**Organized by:**

**Department of Zoology**

**N.E.S. SCIENCE COLLEGE, NANDED**

(Re-accredited by NAAC with 'A' grade (CGPA 3.38), CPE Status)

P.O.Box No. 62, Sneh Nagar, Nanded - 431605

Mob.N. 9552255288, 9423140557

Email: drkirans08@gmail.com

Web: www.sciencecollegenanded.org

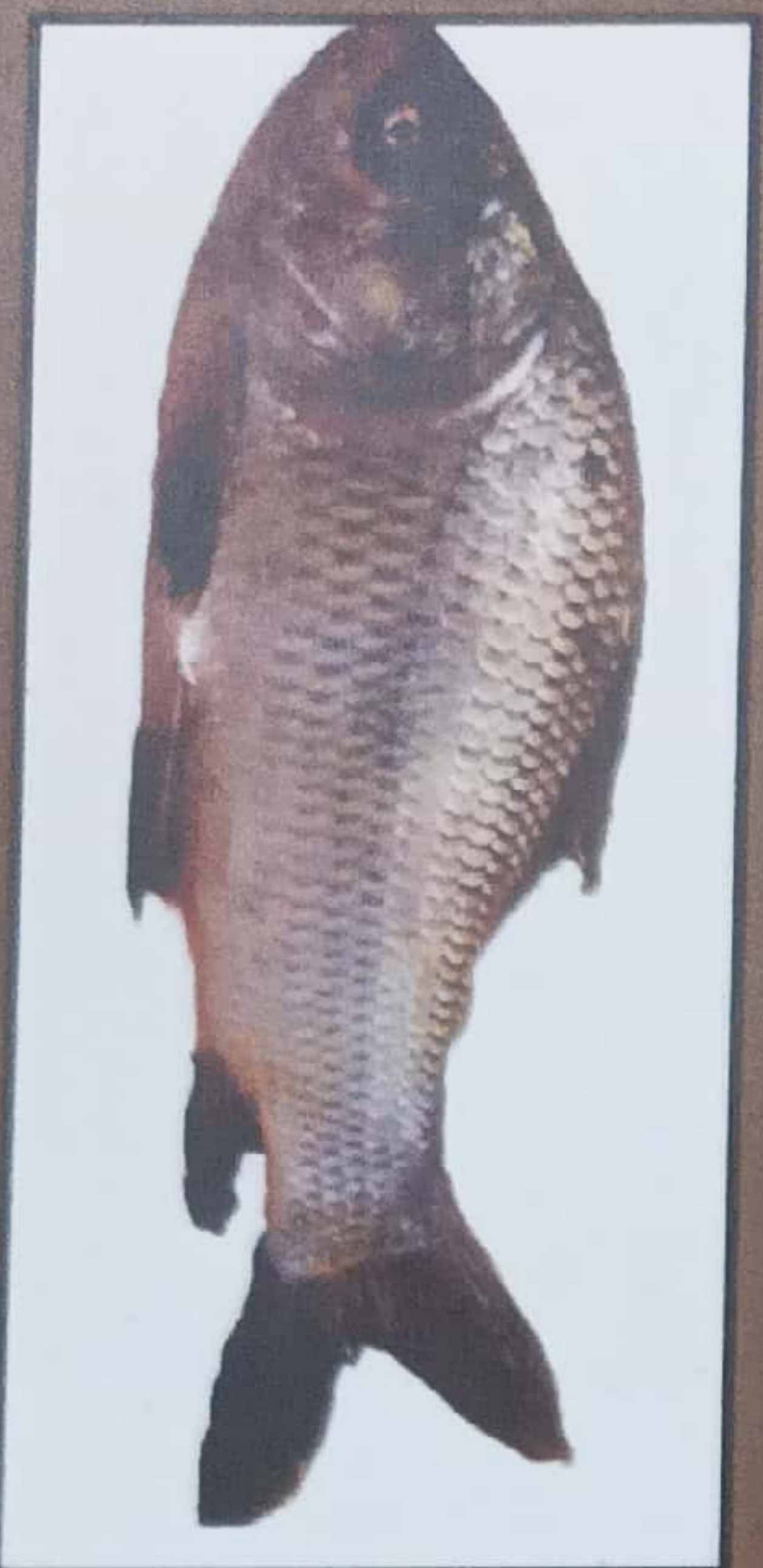
## PREAMBLE:

India has the potential to earn as foreign exchange by way of export of Fishes. The Government of India has also identified this Sector as one of the thrust area for development and providing employment to the Rural poor as well as unemployed youth. Fishes are cold blooded vertebrate. Fishes containing vitamins A and D which is very necessary for human beings. Fisheries sector is important in India. Hence this sector offers good opportunity for rural and urban peoples. It is best way to set up fish pond's for fish culture in small scale.

In this context, the Certificate Course in "Fresh Water Fish Culture Technology" will start in Zoology Department.

## About the College:

N.E.S. Science College, Nanded is the oldest single faculty Science College, founded by a great visionary and leader of Hyderabad liberation struggle, Poojya Swami Ramanand Teerth. College Re-accredited with "A" grade by NAAC with CGPA 3.38 in 3rd Cycle, NIRF Rank - 72 in 2017, CPE Status, DST - FIST, Best College, award by SRTMUN in 2018 and also awarded with "College with Potential for Excellence [CPE]" by UGC.



## OBJECTIVES

1. To impart hands on training on feed and feeding technology.
2. To impart hand on training on breeding.
3. To generate export oriented employment in rural and urban households through fish production.
4. To impart hands on training on culture, breeding of commercially important Fresh Water Fish Culture Technology.
5. To mass-produce a large number of varieties of ornamental fish species to create a large supply of ornamental fish and increase the overall exports.
6. To promote employment and entrepreneurship in the Fresh Water Fish Culture Technology by graduates in fisheries, aquaculture and biological sciences.

## COURSE OUTCOME:

Student will enables to set up pond culture unit  
Students will learn to handle different equipments.  
Students will learn about Breeding of Fishes.  
Student will acquire skills in fish culture and marketing.



## ORDINANCES FOR CERTIFICATE COURSE:

The Certificate Course in Fresh Water Fish Culture Technology, started with keeping view of "Career Oriented Certificate Course" will be covered under following ordinances.

1. Number of Students per batch are 20.
2. The admission/ examination shall be opened to any candidate who has passed 10+2 examination with at least 45% marks in aggregate in Science.
3. The candidate after passing examination will be awarded a separate "Certificate Fresh Water Fish Culture Technology".
4. The supplementary examination shall be held in semester end or as fixed by the department.
5. Every candidate will be required to attend minimum of 75% lectures / periods delivered to that class.
6. The candidate must obtain 40% of the total marks in theory and practical separately to pass the course.
7. Medium of Instructions will be in English.

## Skill Development Certificate Course:

The duration of the certificate course consists of theory, Practical and field visits. During the two months, student will be taught about of fish farming, fish breeding, fish cultivation and areas covered by the course are as follows:

1. Basic requirements of Pisciculture.
2. Selection of site.
3. Pond management, Soil type.
4. Breeding Techniques, Water quality.
5. Practical.



## Short Information of Course.

Sr. No.	Criteria	Particulars
1.	Title of the Course	Certificate Course in "Pisciculture"
2.	Eligibility for Admission	Candidate who passed 10+2 examination with at least 55% marks in aggregate in Science
3.	Passing Marks	The candidate must obtain 35% of the total marks in theory and practical separately to pass the course
4.	No. of Years/ Semester	Three month
5.	Level	University
6.	Pattern	Semester
7.	To be implemented from the Academic Year	From Academic year 2022-23



Course Coordinator  
**Dr. Kiran Shillewar**  
Course Co-ordinator  
Co-coordinator  
**Dr. D.V. Totawar**



Principal  
**Dr. D. U. Gawai**

## **OBJECTIVES OF THE CERTIFICATE COURSE:**

1. To impart hands on training on feed and feeding technology.
2. To impart hand on training on breeding.
3. To generate export oriented employment in rural and urban households through fish production.
4. To impart hands on training on culture, breeding of commercially important Pisciculture.
5. To mass-produce a large number of varieties of ornamental fish species to create a large supply of ornamental fish and increase the overall exports.
6. To promote employment and entrepreneurship in the Fresh Water Fish Culture by graduates in fisheries, aquaculture and biological sciences.

## **COURSE OUTCOME:**

- Student enables to set pond.
- Students will learn to handle different equipments.
- Students will learn Breeding of Fishes.
- Students knowledge about various techniques of fish breeding, rearing and its marketing to make them self sustainable after completing certificate course.

# COURSE STRUCTURE

Subject: **ZOOLOGY**

Title of Course: **Pisciculture**

Marks - 100

Hours - 60

Duration: 3 Months

## Syllabus of the course

### **UNIT – I Pisciculture**

- 1) Introduction of Pisciculture
- 2) Pisciculture: Concept, Definition, Scope of Pisciculture
- 3) Basic requirements of Pisciculture:
  - a. Site Selection
  - b. Soil Type
  - c. Water Quality
- 4) Layout of Fish farm
  - a. Techniques & fish farm construction
  - b. Brood Stock Management

### **UNIT – II Management of Ponds**

#### **A) Selection of site**

- 1) Topography
- 2) Soil type
- 3) Water supply



## **B) Different type of Ponds**

- 1) Preparation & Management of Nursery Pond
- 2) Preparation & Management of Rearing Pond
- 3) Preparation & Management of Stocking Pond

## **C) Pond Management**

- 1) Drying the pond with particular size
- 2) Eradication of aquatic weeds
- 3) Liming of pond
- 4) Pond fertilization
- 5) Stocking of fish seed
- 6) Supplementary feeding
- 7) Harvesting of fish

## **UNIT-III Study of Indigenous & Exotic Carps**

- 1) Biology of Indigenous Fishes: Catla, Rohu, Mrigal
- 2) Biology of Exotic Fishes: Grass carp, Silver carp, Common carp
- 3) Fish Seed Resources: A) Riverine resources B) Artificial resources - Induced Breeding by Hypophysation.

### **Practical**

#### **1) Identification of Indian Major Carp**

- a) Catla
- b) Rohu

## Short Information of Course.

Sr. No.	Criteria	Particulars
1.	Title of the Course	Certificate Course in "Pisciculture"
2.	Eligibility for Admission	Candidate who passed 10+2 examination with at least 55% marks in aggregate in Science
3.	Passing Marks	The candidate must obtain 35% of the total marks in theory and practical separately to pass the course
4.	No. of Years/ Semester	Three month
5.	Level	University
6.	Pattern	Semester
7.	To be implemented from the Academic Year	From Academic year 2022-23



Course Coördinator  
**Dr. Kiran Shillewar**  
Course Co-ordinator  
Co-coordinator  
**Dr. D.V. Totawar**



Principal  
**Dr. D. U. Gawai**



NANDED EDUCATION SOCIETY'S  
**SCIENCE COLLEGE, NANDED**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

PROPOSAL OF ONLINE

**CERTIFICATE COURSE**

IN


**"FRESH WATER FISH  
CULTURE TECHNOLOGY"**

ORGANIZED BY

DEPARTMENT OF FISHERY SCIENCE

Science College, Nanded.

2019-20

  
PRINCIPAL  
E. S. Science College, Nanded

Sr. No.	Heading	Particulars
1.	Title of the Course	Certificate Course in "Fresh Water Fish Culture Technology"
2.	Eligibility for Admission	Candidate who passed 10+2 examination with at least 55% marks in aggregate in Science
3.	Passing Marks	The candidate must obtain 35% of the total marks in theory and practical separately to pass the course
4.	No. of Years/ Semester	Two month
5.	Level	University
6.	Pattern	Semester
7.	To be implemented from the Academic Year	From Academic year 2019-20

Date: 1/08/2019

*[Signature]*

Convener  
Dr. Kiran Shillewar

Head,  
Department of Fishery Science  
NES Science College, Nanded



*[Signature]*

Principal  
Dr. D. U. Gawai  
Principal  
N.E.S. Science College  
Nanded



# COURSE STRUCTURE

Subject: **FISHERY SCIENCE**

Title of Course: **Fresh Water Fish Culture Technology**

Marks - 100

Hours - 60

Duration: 2 Months

## Syllabus of the course

### UNIT – I

- 1) Introduction of Fresh Water Fish Culture
- 2) Definition, Scope, History
- 3) Indian Major Carp
  - a. Biology of Catla
  - b. Biology of Labeo
  - c. Biology of Mrigal
- 4) Exotic Carp
  - a. Biology of Silver carp
  - b. Biology of Grass carp
  - c. Biology of Common carp

### UNIT – II Management of Ponds

#### A) Selection of site

- 1) Topography
- 2) Soil type
- 3) Water supply



## B) Different type of Ponds

- 1) Nursery Pond
- 2) Rearing Pond
- 3) Stocking Pond

## C) Pond Management

- 1) Drying the pond with particular size
- 2) Eradication of aquatic weeds
- 3) Liming of pond
- 4) Pond fertilization
- 5) Stocking of fish seed
- 6) Supplementary feeding
- 7) Harvesting of fish

## UNIT-III Breeding Techniques

- 1) Induced Breeding
- 2) Synthetic hormones used in Induced breeding
- 3) Preparation of gland suspension for Injection and process

### Practical

#### 1) Identification of Indian Major Carp

- a) Catla
- b) Rohu
- c) Mrigal



1. Identification of Events Group

- a. Group 1
- b. Group 2
- c. Group 3

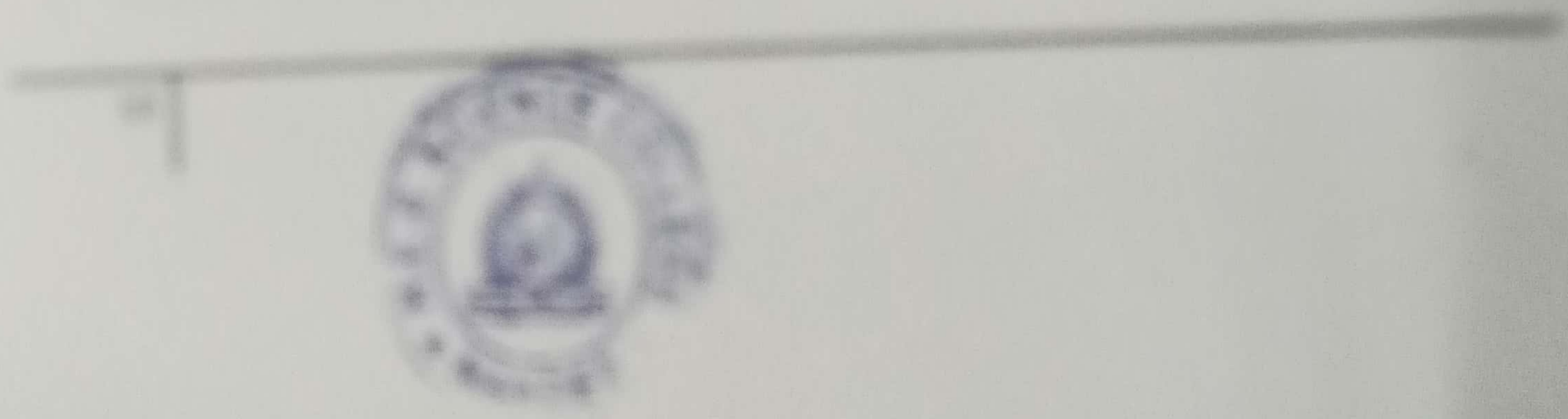
2. Identification of Risk Level of various events Group and Events Group

- a. High
- b. Low
- c. Moderate

3. Ranking Evaluation

- a. High Risk
- b. Low Risk

4. Risk in Risk Level







# SCIENCE COLLEGE, NANDED

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)

(Re-accredited with 'X' grade by NAAC (CGPA 3.99) 3<sup>rd</sup> Cycle, CPB Status: DST FIRST)

NAAC Ranking 72 (Year - 2017), Best College award 2019/2020

PO Box No. 52, Shah Nagar, Nanded - 431405 (MS, India) P (O) 02462 251648, 250465 Fax 02-

Email: principal@sciencecollege.nanded.org, sciencecollege1950@gmail.com Web: www.sciencecollege

Reg. No. 1-12, 1962, 20/06/1990  
1788/1261, 13/08/1991

NES/SCN/2020-21/ 1201

## N.E.S. SCIENCE COLLEGE, NANDED.

UGC-CPE Sponsored Approved by S. R. T. M.  
University, Nanded

Online

CERTIFICATE COURSE IN

*"Fresh Water Fish Culture Technology"*

**Started 9<sup>th</sup> January 2020**

### List of Admitted Students Certificate Course 2019-20

B.Sc. II <sup>nd</sup> Year		B.Sc. III <sup>rd</sup> Year		M.Sc. I <sup>st</sup> & II <sup>nd</sup> Year	
1.	Kumre Jyoti	1.	Mansui Mukhirwar	1.	Sujay Patil
2.	Dhage Laxmi	2.	Shirane Priyanka	2.	Rushi Parvat
3.	Dasarwar Monika	3.	Indure Pooja	3.	Prashant Chanchalwad
4.	Ade Samiksha	4.	Jadhav Trupti	4.	Sumeedh Kamble
5.	Thakur Vaibhav	5.	Chouhan Sanyogita	5.	Junaid Shaikh
6.	Meshram Husain	6.	Muttepwar Sujit	6.	Shahid Shaikh
7.	Rathod Deepak	7.	Umate Sushilkumar	7.	Jyoti Dhale
8.	Mahalle Santosh	8.	Bansode Ram	8.	Deepali Waghmare
9.	Kadam Mangesh				

Dr Kiran Shillewar  
(Course Coordinator)



Dr D. U. Gawai  
(Principal)  
PRINCIPAL

## Modality of Assessment

Theory – 60 Marks

Practical – 40 Marks

Duration – The Examination shall be of 2 hours duration.

MCQ question paper pattern

- 1) There shall be 60 questions each of One marks. On Each Unit there will be 20 question
- 2) All question shall be compulsory.
- 3) Terms for Practical Examination.

Sr. No.	Particulars	Marks
1)	Practical Exam	25
2)	Breeding Technique	10
3)	Viva	05

## Programme of the course

- 1) The candidate require to attend 75% lectures/ periods
- 2) The Candidate must obtain 35% of the total marks in theory and practical
- 3) Candidate will be offer English/ Marathi as a Medium of Instructions/ Examination

## Eligibility

12th Science Examination passed with Biology.

## Training Duration:

Training Duration:	60 Days
Practical:	100 Hrs
Theory :	100 Hrs
Minimum Qualification:	XIIth Sci.
Minimuma Age:	18 Years
Number of Seats:	20 Student Per Batch

## Patrons

**Dr. Venkatesh Kabde**

President, Nanded Education Society, Nanded

**Adv. Chaitanyabapu Deshmukh**

Vice-President, Nanded Education Society, Nanded

**Sow. Shyamal Patki**

Secretary, Nanded Education Society, Nanded

**CA.Dr. Pravin Patil**

Joint-Secretary, Nanded Education Society, Nanded

## Organizing Committee:

**Chief Organizer :**

**Dr. D. U. Gawai, Principal**

**Convener:**

**Dr. K. S. Shillewar,**

Asst. Prof. & Head, Dept. of Fishery Science

**Co-Convener:**

**Dr. C. S. Bhowate**

**Dr. V. R. Marathe**

**Dr. R. V. Sangvikar**

**Dr. D. V. Totawar**

**Treasurer :**

**Dr. V.B. Chavan**

**Dr. K. R. Gaikwad**

## Executive Committee:

**Prof. M.A. Joshi,**

**Mrs. U.B. Chavan**

**Dr. L.P. Shinde**

**Mr. E.M. Khillare**

**Dr. D. D. Pawar**

**Dr. S. R. Pingalkar**

**Dr. N. P. Pawar**

**Dr. Mrs. A. R. Shukla**

**Dr. S.L. Jadhav**

**Dr. Mrs. V. V. Kulkarni**

**Dr. A. P. Borikar**

**Mrs. V.D. Borgaonkar**

**: Contact :**

**Dr. K. S. Shillewar,**

Asst. Prof. & Head, Dept. of Fishery Science

**N.E.S. SCIENCE COLLEGE, NANDED**



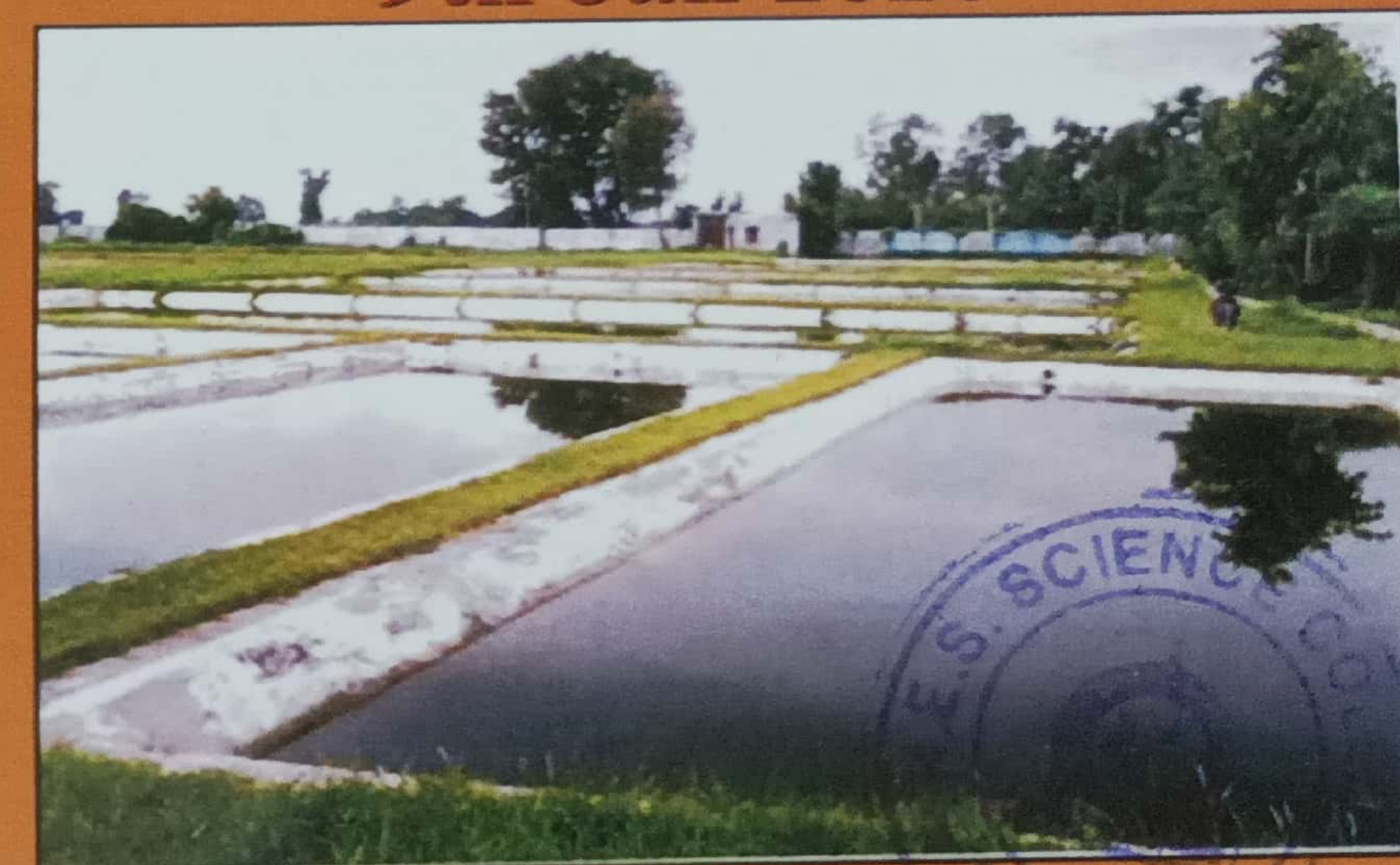
**N.E.S. SCIENCE COLLEGE, NANDED**

**UGC-CPE Sponsored**

**Approved By SRTMU, Nanded  
Online**

**CERTIFICATE COURSE IN  
“Fresh Water Fish  
Culture Technology”**

**9th Jan 2020**



**Organized by:**

**Department of Fishery Science**

**N.E.S. SCIENCE COLLEGE, NANDED**

(Re-accredited by NAAC with 'A' grade (CGPA 3.38), CPE Status)

P.O.Box No. 62, Sneh Nagar, Nanded - 431605

Mob No. 9552255288, 9423140557

NANDED EDUCATION SOCIETY'S

# SCIENCE COLLEGE, NANDED

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)

(Re-accredited with "A" grade by NAAC (CGPA 3.38) 3rd Cycle, CPE Status, DST-FIST,

NIRF Ranking-72 (Year - 2017), Best College award SRTMUN)

P.O. Box No.62, Sneh Nagar, Nanded - 431605 (MS, India) P (O) 02462-251648, 250465 Fax.02462-250465

Email : sciencecollege1950@gmail.com Web : www.sciencecollegenanded.org

विद्यया ऽ मृतमश्नुते  
विद्यालय कॉलेज, नानेड  
No. F-12, 1962, 26/06/1950  
CMF 1261, 13/10/1661

## CERTIFICATE

### Resource Person/ Faculty Member

Details:-

**Dr. Kiran Shillewar, Head Department of Fishery Science, Science College, Nanded.**

Conducted successfully offline and online two months certificate course classes on (Fresh Water Fish Culture Technology), Dated: - 09 January 2020 to 10 March 2020.



Principal  
Principal  
N.E.S. Science College,  
Nanded.

### ORDINANCES FOR CERTIFICATE COURSE:

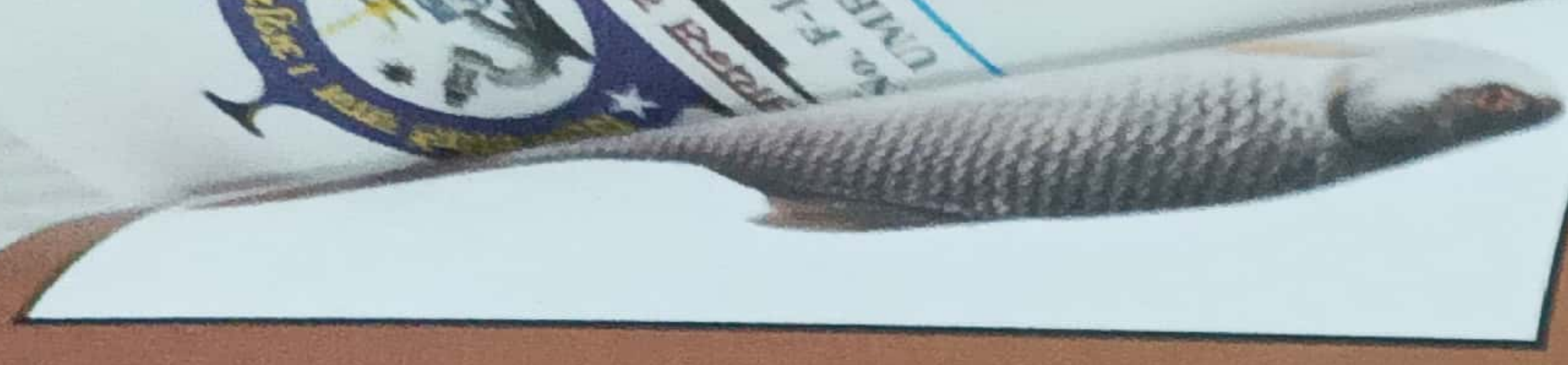
The Certificate Course in Fresh Water Fish Culture Technology, started with keeping view of "Career Oriented Certificate Course" will be covered under following ordinances.

1. Number of Students per batch are 20.
2. The admission/ examination shall be opened to any candidate who has passed 10+2 examination with at least 45% marks in aggregate in Science.
3. The candidate after passing examination will be awarded a separate "Certificate Fresh Water Fish Culture Technology".
4. The supplementary examination shall be held in semester end or as fixed by the department.
5. Every candidate will be required to attend minimum of 75% lectures / periods delivered to that class.
6. The candidate must obtain 35% of the total marks in theory and practical separately to pass the course
7. Candidates will be offered English as the medium of Instructions/ Examination.

### Skill Development Certificate Course:

The duration of the certificate course consists of theory, Practical and field visits. During the two months, student will be taught about of fish farming, fish breeding, fish cultivation and areas covered by the course are as follows:

1. Fish Biology (Catla, Rohu, Mrigal)
2. Selection of site.
3. Pond management.
4. Breeding Techniques.
5. Practical.



### OBJECTIVES OF THE CERTIFICATE COURSE:

1. To impart hands on training on feed and feeding technology.
2. To impart hand on training on breeding.
3. To generate export oriented employment in rural and urban households through fish production.
4. To impart hands on training on culture, breeding of commercially important Fresh Water Fish Culture Technology.
5. To mass-produce a large number of varieties of ornamental fish species to create a large supply of ornamental fish and increase the overall exports.
6. To promote employment and entrepreneurship in the Fresh Water Fish Culture Technology by graduates in fisheries, aquaculture and biological sciences.

### COURSE OUTCOME:

Student will enables to set up pond.  
Students will learn to handle different equipments.  
Students will learn Breeding of Fishes.  
Improvement of knowledge about various techniques of fish breeding, rearing and its marketing  
To make them self sustainable after completing certificate course.



### PREAMBLE:

India has the potential to earn as foreign exchange by way of export of Fishes. The Government of India has also identified this Sector as one of the thrust area for development and providing employment to the Rural poor as well as unemployed youth. Fishes are cold blooded vertebrate. Fishes containing vitamins A and D which is very necessary for human beings. Fisheries sector is important in India. Hence this sector offers good opportunity for rural and urban peoples. It is best way to set up fish ponds for fish culture in small scale.  
In this context, the Certificate Course in "Fresh Water Fish Culture Technology" will start in Fishery Department.

### About the College:

N.E.S. Science College, Nanded is the oldest single faculty Science College, founded by a great visionary and leader of Hyderabad liberation struggle, Poojya Swami Ramanand Teerth. College Re-accredited with "A" grade by NAAC with CGPA 3.38 in 3rd Cycle, NIRF Rank - 72 in 2017, CPE Status, DST - FIST, Best College, award by SRTMUN in 2018 and also awarded with "College with Potential for Excellence [CPE]" by UGC.





*NANDED EDUCATION SOCIETY'S*

## **SCIENCE COLLEGE, NANDED**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST,  
CPE Status)

**CERTIFICATE COURSE**

**IN**

**"HYDRO EXPLORATION AND WATER QUALITY**

**ANALYSIS (CCHEAWQA)"**

**ORGANIZED BY**

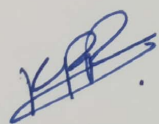
**DEPARTMENT OF GEOLOGY**

**Science College, Nanded**

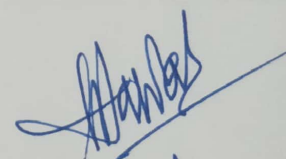
**2021-22**

## Short information of Course

Sr. No.	Criteria	Particulars
1	Title of the Course	Certificate Course on Hydro Exploration and Water Quality Analysis.
2	Eligibility for Admission	Intermediate or Graduate.
3	Level	UG & PG students of regular science stream.
4	Passing Marks	50%
5	No. of Years/ Semester/Duration	2 Months
6	To be implemented from the Academic Year	From Academic year 2021-22

  
Course Coordinator  
**Dr. P.R. Kulkarni**

**Head**  
Department of Geology  
Science College, Nanded

  
Principle  
**Dr. D.U. Gawai**

## ***COURSE OBJECTIVE***

1. To understand various components and interrelationship of hydrological cycle.
2. To inculcate scientific temperament among the students to take up farming with scientific approach.
3. To apply knowledge of different rock types to understand their water holding capacities.
4. To understand groundwater condition in various parts of Maharashtra.
5. Develop awareness about water quality criteria and standards, and their relation to public health and environment.
6. Understand important parameters for measuring water quality.
7. To make the people aware about the extent of pollutants in their areas which in turn
8. helps to understand the damage causing to their health.

## ***EXPECTED LEARNING OUTCOMES***

1. To use the techniques and skills necessary for groundwater exploration and resource management.
2. To apply the Knowledge of Geology and chemistry.
3. To identify, formulate and solve the environmental problems
4. Apply (gained) knowledge and experience regarding water quality and treatment methods in design, operation & maintenance and rehabilitation of conventional water treatment processes and plants.
5. This course will cover building blocks contain to understand groundwater and its relationship with geology.

## ***Course Content***

### **Unit I: (20 Hours)**

Hydrogeology- Introduction, hydrologic cycle, water table, aquifer and its classification. Aquifer properties such as porosity, permeability, specific yield, specific retention, storativity, hydraulic conductivity. Darcy's law,

### **Unit II: (18 Hours)**

Occurrence of groundwater in igneous, sedimentary and metamorphic rocks. Hydrological prospecting. Concept of watershed. Methods of soil and water conservation.

### **Unit III: Water Quality Fundamentals (6 Hours)**

Chemistry of water, Physical and chemical properties, Water resources, water pollution, Important water Quality parameters and methods for their determination - turbidity, color, taste, pH, acidity, alkalinity, chemical constituents, hardness, dissolved oxygen etc., water sampling, standard for drinking water as per BIS specifications, household water treatment and safe storage.

### **Unit IV: Practical's based on Laboratory tests for water quality monitoring and Toposheets by Survey of India (6 Hours)**

Understanding Toposheet Reading part. Groundwater provinces of India part. Determination of pH and conductivity, Test for acidity and alkalinity, Test for total hardness, Test for chloride, calcium, iron etc., calculation of magnesium content and total solids.



## WEEK PLANS WITH CONTENT SPECIFICATION

WEEK	BROAD AREA	SPECIFICATION
WEEK 1	Ground Water Exploration (GWE)	Groundwater Hydrology & its relation to other sciences. Hydrological Cycle. Elements & components of Hydrological Cycle. Occurrence and distribution of Groundwater.
WEEK 2	Ground Water Exploration (GWE)	Influent and effluent seepage. Spring and their types. Theory of groundwater flow, Darcy's law and its limitation for groundwater flow. Aquifer and their types.
WEEK 3	Ground Water Exploration (GWE)	Hydrological properties of rock and their definition. Specific yield, Porosity, permeability, specific retention
WEEK 4	Ground Water Exploration (GWE)	Groundwater provinces of India. Groundwater condition in different parts of Maharashtra. Lithological control.
WEEK 5	Water Quality Analysis (WQA)	Water Quality Fundamentals. Chemistry of water, Physical and chemical properties. Water resources, water pollution, Important water Quality parameters. Methods for their determination
WEEK 6	Water Quality Analysis (WQA)	Laboratory tests for water quality monitoring. Determination of pH and conductivity, Test for total Hardness, Test for chloride, calcium, iron etc.
WEEK 7	Water Quality Analysis (WQA)	Lab Test for COD of water samples. Determination of BOD of water samples. Determination of total soluble of salt content.



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## **SCIENCE COLLEGE, NANDED**

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(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST,  
CPE Status)

CERTIFICATE COURSE IN

*"Certificate Course on Morphometric*

*(Petrographical) Analysis of Minerals and Rocks (CCMAMR)"*

ORGANIZED BY


**DEPARTMENT OF GEOLOGY**


Science College Nanded

**2023-24**

## Short information of Course

Sr. No.	Criteria	Particulars
1	Title of the Course	Certificate Course on Morphometric (Petrographical) Analysis of Minerals and Rocks.
2	Eligibility for Admission	Intermediate or Graduate.
3	Level	UG & PG students of regular science stream.
4	Passing Marks	50%
5	No. of Years/ Semester/Duration	2 Months
6	To be implemented from the Academic Year	From Academic year 2023-24

  
Course Coordinator  
Dr. P.R. Kulkarni

  
Principal  
Dr. D.U. Gawai



PRINCIPAL  
S. Science College, Nanded

## ***COURSE OBJECTIVE***

1. The student will study the basic principles behind the arrangement of atoms to form crystal structures, how these atoms are coordinated and bonded and how this is reflected in the external form, chemical composition, and physical properties of the crystals.
2. The student will study how to identify the most common minerals in hand specimen and, by using optical techniques, learn how to identify the common minerals in thin section.
3. The course introduces the minerals, which are of economic significance. The course also introduces the student to sophisticated instruments used in deciphering mineral structure and chemistry.
4. The students will study Origin of magmas in crust and mantle, evaluate different processes of magma generation Role of temperature, pressure, depth and volatiles on magma composition.
5. This Course helps to understand Formation of metamorphic rocks as controlled by pressure-temperature changes in the deep Earth consequently they are the windows to deep Earth composition, structure and processes.
6. This course Helps to find out how Metamorphism as the fundamental process of altering earlier minerals and formation of new minerals stable in the changed physio-chemical conditions.

## ***EXPECTED LEARNING OUTCOMES***

At the completion of the course student would be able to,

1. Explain distribution of elements in different structural sites of the minerals.
2. Explain how the properties of chemical elements and their bonds determine the structure and composition of minerals.
3. Discuss which mineral identification method is appropriate for solving a mineralogical problem.
4. Recognize and describe the basic properties and chemistry of common rock-forming minerals.
5. Explain generation of different mantle reservoirs.
6. Explain origin and differentiation of magmas.
7. Identify and characterize igneous rocks based on megascopic and microscopic observations.
8. Identify and characterize metamorphic rocks based on megascopic and microscopic observations.



## ***COURSE CONTENTS***

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### **UNIT I: (10 Hours)**

Introduction to mineralogy, classification and composition mineral, Physical properties of mineral (colour, lustre, streak, habit, cleavage, fracture, hardness, relative specific gravity).

### **Unit II: (5 Hours)**

formation of mineral by different process (Magmatism, Metamorphism (Regional and Contact), Contact metasomatism, Sublimation, Hydrothermal, Water-Rock interaction (Marine/Groundwater/Thermal springs), Weathering, Authigenic growth during diagenesis, Chemical/Biochemical precipitation, Evaporation, Bacterial processes, Meteorite impact.

### **Unit III: (10 Hours)**

Introduction to common rock forming silicate mineral (Olivine, Pyroxene, Amphibole, Mica, Silica and Feldspar), carbonate, oxide, halite sulphate, sulphides and native elements

### **Unit IV: (20 Hours)**

Petrology Definition, Textures, structures and classification of (Igneous Petrology, Sedimentary Petrology, Metamorphic Petrology) and rock cycle.





**NANDED EDUCATION SOCIETY'S**  
**SCIENCE COLLEGE, NANDED**

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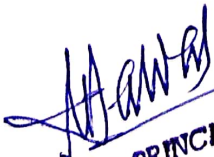
**CERTIFICATE COURSE IN**  
**VERBAL AND NON-VERBAL**  
**REASONING**

**ORGANIZED BY**

**DEPARTMENT OF MATHEMATICS & APPLIED**  
**MATHEMATICS**

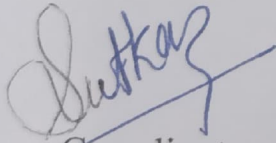
**NES Science College, Nanded**

**2023-24**

  
**PRINCIPAL**  
S. Science College, Nanded

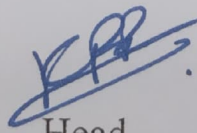
## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of the Course	Certificate Course in "Verbal and Non-Verbal Reasoning"
2.	Eligibility for Admission	Candidate who passed 10+2 examination with at least 50% marks in aggregate
3.	Passing Marks	The candidate must obtain 40% of the total marks in theory to pass the course
4.	No. of Years/ Semester	Three months
5.	Level	College
6.	Pattern	Semester
7.	To be implemented from the Academic Year	Academic year 2023-24



Course Coordinator

**Dr. Prashant S. Sutkar**



Head

**Dr. P. R. Kulkarni**



Principal

**Dr. D. U. Gawai**



## OBJECTIVES OF THE CERTIFICATE COURSE:

1. To develop an interest among the students about competitive exams.
2. To enhance the mental ability of the students.
3. To prepare the students for Banking, railway and staff selection commission exams.
4. To prepare the students for MPSC and UPSC examinations.
5. To prepare the students for PET/SET/NET and other post graduate entrance exams.

## COURSE OUTCOME:

- Student enables to understand the logic.
- Students will learn various techniques and methods of problem solving.
- Students will score better in various banking, railway, and staff selection commission exams.
- Student can identify strength and weakness in specific areas for better development.
- Students knowledge about verbal and non-verbal reasoning make them self sustainable after completing certificate course.





# COURSE STRUCTURE

Subject: MATHEMATICS

Title of Course: **VERBAL AND NON-VERBAL REASONING**

Marks - 100

Hours - 60

Duration: 4 Months

## Syllabus of the course

### UNIT – I General Mental Ability

- 1) **Series Completion**- Number series, Alphabet series, Alpha-numeric series, Continuous pattern series.
- 2) **Analogy**- Common relationships, completing the analogous pair, simple analogy, choosing the analogous pair, double analogy, choosing similar word.
- 3) **Classification** – choose the odd word, choose the odd pair of words, choose the odd numerical, choosing the odd numerical pair, choosing the odd letter group.
- 4) **Coding**- Decoding – letter coding, direct letter coding, number/symbol coding, matrix coding, deciphering number and symbol codes for messages.
- 5) **Blood Relations** – deciphering jumbled up descriptions, relation puzzle.
- 6) **Direction Sense Test** – classification type questions,
- 7) **Logical Venn Diagrams**

### UNIT – II Logical Deduction

- 1) **Logic** – logical reasoning, logical deduction, two- premise arguments.
- 2) **Statement-Arguments**
- 2) **Statement- Assumptions**



3) Statement- Course of Action

**UNIT-III Non-Verbal Reasoning**

- 1) **Series** – five figure series, three and four figure series. Choosing the missing figure in a series.
- 2) **Analogy** – choosing one element of a similar related pair, choosing the set of similar related figures.
- 3) **Classification** – choosing odd figure, choosing a similar figure.
- 4) **Analytical reasoning**

**Problems and Solutions**

- 1) Problem solving on series completion
- 2) Problem solving on Analogy
- 3) Problem solving on Classification
- 4) Problem solving on Coding- Decoding
- 5) Problem solving on Blood Relations
- 6) Problem solving on Direction Sense Test
- 7) Problem solving on Logical Venn Diagrams
- 8) Problem solving on Logic
- 9) Problem solving on Statement-Arguments
- 10) Problem solving on Statement- Assumptions
- 11) Problem solving on Statement- Course of Action





**NANDED EDUCATION SOCIETY'S**  
**SCIENCE COLLEGE, NANDED**

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(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**CERTIFICATE COURSE IN**  
**VERBAL AND NON-VERBAL**  
**REASONING**

**ORGANIZED BY**  
**DEPARTMENT OF MATHEMATICS & APPLIED**  
**MATHEMATICS**

**NES Science College, Nanded**  
**2022-23**

## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of the Course	Certificate Course in "Verbal and Non-Verbal Reasoning"
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3.	Passing Marks	The candidate must obtain 40% of the total marks in theory and practical separately to pass the course
4.	No. of Years/ Semester	Three months
5.	Level	College
6.	Pattern	Semester
7.	To be implemented from the Academic Year	Academic year 2022-23



Course Coordinator & I/C Head  
**Mr. Prashant S. Sutkar**



Principal  
**Dr. D. U. Gawai**



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- Students will score better in various banking, railway, and staff selection commission exams.
- Student can identify strength and weakness in specific areas for better development.
- Students knowledge about verbal and non-verbal reasoning make them self sustainable after completing certificate course.



## COURSE STRUCTURE

Subject: **MATHEMATICS**

Title of Course: **VERBAL AND NON-VERBAL REASONING**

Marks - 100

Hours - 45

Duration: 3 Months

### Syllabus of the course

#### UNIT – I General Mental Ability

- 1) **Series Completion-** Number series, Alphabet series, Alpha-numeric series, Continuous pattern series.
- 2) **Analogy-** Common relationships, completing the analogous pair, simple analogy, choosing the analogous pair, double analogy, choosing similar word.
- 3) **Classification** – choose the odd word, choose the odd pair of words, choose the odd numerical, choosing the odd numerical pair, choosing the odd letter group.
- 4) **Coding-** Decoding – letter coding, direct letter coding, number/symbol coding, matrix coding, deciphering number and symbol codes for messages.
- 5) **Word Relations** – deciphering jumbled up descriptions, relation puzzle.
- 6) **Direction Sense Test** – classification type questions,
- 7) **Logical Venn Diagrams**

#### UNIT – II Logical Deduction

- 1) **Logic** – logical reasoning, logical deduction, two- premise arguments.
- 2) **Statement-Arguments**
- 2) **Statement- Assumptions**



3) **Statement- Course of Action**

**UNIT-III Non-Verbal Reasoning**

- 1) **Series** – five figure series, three and four figure series. Choosing the missing figure in a series.
- 2) **Analogy** – choosing one element of a similar related pair, choosing the set of similar related figures.
- 3) **Classification** – choosing odd figure, choosing a similar figure.
- 4) **Analytical reasoning**

**Problems and Solutions**

- 1) Problem solving on series completion
- 2) Problem solving on Analogy
- 3) Problem solving on Classification
- 4) Problem solving on Coding- Decoding
- 5) Problem solving on Blood Relations
- 6) Problem solving on Direction Sense Test
- 7) Problem solving on Logical Venn Diagrams
- 8) Problem solving on Logic
- 9) Problem solving on Statement-Arguments
- 10) Problem solving on Statement- Assumptions
- 11) Problem solving on Statement- Course of Action





NANDED EDUCATION SOCIETY'S  
**SCIENCE COLLEGE, NANDED**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**CERTIFICATE COURSE IN**  
**WORKING AND APPLICATIONS OF**  
**LATEX SOFTWARE**

**ORGANIZED BY**

**DEPARTMENT OF MATHEMATICS**  
**& APPLIED MATHEMATICS**

**Science College, Nanded**

**2023-24**

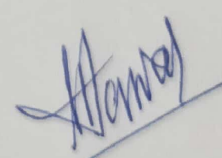


## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of the Course	Certificate Course in "Working and Applications of LaTeX Software"
2.	Eligibility for Admission	Candidate who passed 10+2 examination with at least 50% marks in aggregate
3.	Passing Marks	The candidate must obtain 40% of the total marks in theory and practical separately to pass the course
4.	Duration of the Course/ Semester	Four months
5.	Level	College
6.	Pattern	Short term course
7.	To be implemented from the Academic Year	Academic year 2023-24

  
Head  
**Dr. P.R. Kulkarni**

  
Course Co-ordinator  
**Dr. K. R. Gaikwad**

  
Principal  
**Dr. D. U. Gawai**  
Principal  
N.E.S. Science College,  
Mumbai

## SYLLABUS OF THE COURSE

### TITLE OF COURSE: WORKING AND APPLICATIONS OF LATEX SOFTWARE

Course will be of 04 Credits; each Credit will have 15 hours.

Unit	Topic	Credit
I	Installation of Latex Software and Basic formulation	I
II	Design and Typesetting of text and Equations	I
III	Document classes for report writing, Book, Thesis etc.	I
	Practical	I
	Total	IV Credit

## COURSE STRUCTURE

Subject: **MATHEMATICS**

Title of Course: **WORKING AND APPLICATIONS OF LaTeX SOFTWARE**

Marks - **100**

Hours - **60**

Duration: **4 Months**

### Syllabus of the course

#### UNIT - I

- 1) Introduction of Latex software
- 2) Installation of LaTeX software
- 3) Typesetting
  - a. Page styles
  - b. Font size
- 4) Environment
  - a. Fancy Header
  - b. Typesetting texts

#### UNIT - II Design and Typesetting of Equation

##### A) Selection of

- 1) Basic Mathematics symbols
- 2) 2 X 2 Matrices
- 3) Arrays

## **B) Typesetting Mathematical Formulae**

- 1) Fractions
- 2) Integrals
- 3) Sums

## **C) Inline mathematics formulas and displayed equations.**

## **D) Producing Mathematical Graphics**

### **UNIT-III Document classes for Book, Thesis**

- 1) Table of content, index.
- 2) Geometry
- 3) Bibliography management

### **Practical**

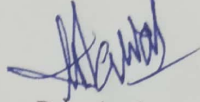
- 1) Installation of LaTeX software
- 2) Selection of font size, font style, font color.
- 3) Selection of mathematical symbols and headings.
- 4) Typesetting of mathematical equations and equation numbering.
- 5) Tables, graphs, image insertion.
- 6) Management of references.
- 7) Typing of research paper or report.

Date: 11/12/2022

## Notice

All the students those are enrolled for the two Month Certificate course, "Working and Applications of Latex", are here by informed that the course has been start as per schedule. Kindly attend the course regularly. The duration of course is of two months/*three month/one month.*



  
Principal

Dr. D.U. Gawai  
**PRINCIPAL**  
Science College, Nanded



# **Certificate Course in Renewable energy**

A certificate course developed by  
Nanded Education Society's

**Science college, Nanded.**

(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

January – February 2024



# Certificate Course in Renewable energy

A certificate course developed by  
Nanded Education Society's  
**Science college, Nanded.**

(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

January – February 2024

PRINCIPAL  
S. Science College, Nanded

### 1. Aim

The aim of this certificate course is to provide participants with a *comprehensive* understanding of renewable energy sources, technologies, and their applications. Participants will gain knowledge about various renewable energy systems, their design, installation, maintenance, and the socio-economic impact of renewable energy adoption.

### 2. Course benefits

- Gain expertise in renewable energy technologies and their implementation.
- Enhance career opportunities in the rapidly growing renewable energy sector.
- Contribute to sustainability and environmental conservation efforts.
- Acquire practical skills through hands-on training sessions.
- Network with industry professionals and experts in the field.

### 3. Ordinances for certificate course

The Certificate Course in Renewable energy is structured as a 'Career Oriented Certificate Course' with a focus on providing students a comprehensive understanding of renewable energy concepts.

#### Admission Criteria:

Eligibility for admission/examination requires a minimum of a 10+2 examination pass with at least 45% marks in aggregate in the Science stream.

#### Batch Size:

There is no specified limit on the number of students per batch for this certificate course. Attendance Requirement: Every candidate must attend a minimum of 75% of the lectures/periods delivered in the class to be eligible for examination and successful course completion.





**Examination and Certification:**

Upon successfully passing the examination, candidates will be awarded a Certificate for the Course in Renewable energy.

**Passing Criteria:**

To pass the course, a candidate must obtain a minimum of 35% of the total marks in both theory and practical components separately.

**Medium of Instruction/Examination:**

English will be the medium of instruction and examination for all candidates enrolled in the certificate course in Astrophysics.

**4. Syllabus of the Course****Module 1: Introduction to Renewable Energy**

Overview of energy sources and their classification  
Importance of renewable energy in the context of climate change and sustainability  
Global and regional renewable energy trends and forecasts  
Economic, environmental, and social benefits of renewable energy adoption

**Module 2: Solar Energy Technologies**

Solar radiation fundamentals and solar geometry  
Photovoltaic (PV) technology: principles, components, and system configurations  
Solar thermal systems: flat plate collectors, concentrating collectors, and applications  
Design considerations and performance analysis of solar energy systems  
Integration of solar energy with existing energy infrastructure

**Module 3: Wind Energy Technologies**

Wind energy resource assessment and wind turbine technology  
Types of wind turbines: horizontal-axis and vertical-axis  
Wind turbine components and their functions  
Wind farm design, layout optimization, and power forecasting  
Grid integration challenges and solutions for wind energy

**Module 4: Hydropower Technologies**

Hydrological cycle and principles of hydropower generation



Types of hydropower plants: conventional, run-of-river, and pumped storage  
Hydropower turbine technology and efficiency optimization  
Environmental impacts and mitigation measures of hydropower projects  
Small-scale hydropower and micro-hydro systems

#### **Module 5: Biomass and Bioenergy**

Biomass resources: types, availability, and characteristics  
Bioenergy conversion processes: combustion, gasification, and anaerobic digestion  
Biogas production from organic waste and agricultural residues  
Biofuels: biodiesel, bioethanol, and their production technologies  
Environmental and socio-economic implications of biomass utilization

#### **Module 6: Geothermal Energy**

Geothermal heat sources and geothermal gradient  
Geothermal power generation: flash steam, binary cycle, and dry steam systems  
Geothermal reservoir engineering and reservoir management techniques  
Direct use applications of geothermal energy: district heating, greenhouse heating, and industrial processes  
Exploration methods and risk assessment for geothermal projects

#### **Module 7: Energy Storage Systems**

Importance of energy storage in renewable energy integration  
Types of energy storage technologies: batteries, pumped hydro, compressed air, and thermal storage  
Storage system design considerations and performance analysis  
Role of energy storage in grid stability, load balancing, and peak shaving  
Emerging trends and advancements in energy storage research

#### **Module 8: Renewable Energy Policies and Regulations**

Overview of national and international renewable energy policies  
Incentives, subsidies, and financial mechanisms to promote renewable energy deployment  
Regulatory frameworks for grid connection, net metering, and feed-in tariffs  
Environmental standards and permitting requirements for renewable energy projects  
Case studies of successful renewable energy policy implementations



### **Module 9: Project Management in Renewable Energy**

Project development lifecycle: feasibility assessment, planning, implementation, and operation

Risk assessment and mitigation strategies for renewable energy projects

Project financing options and financial modeling for renewable energy ventures

Stakeholder engagement, community outreach, and public relations in renewable energy projects

Project monitoring, evaluation, and performance optimization techniques

### **Module 10: Case Studies and Real-World Applications**

Analysis of successful renewable energy projects from around the world

Lessons learned, challenges faced, and best practices in renewable energy deployment

Case studies on innovative renewable energy technologies and business models

Opportunities and barriers for scaling up renewable energy adoption in different regions

Group discussions and presentations on real-world applications of renewable energy concepts

## **5. Attraction of course**

- Industry-relevant curriculum designed by experts in the field.
- Hands-on training with state-of-the-art equipment and technologies.
- Guest lectures and seminars by industry professionals.
- Site visits to renewable energy installations.
- Opportunities for internships and placements in leading renewable energy companies.

## **6. Classroom and Practical sessions**

- Interactive lectures by experienced faculty members.
- Hands-on training in laboratories equipped with renewable energy systems.
- Field visits to renewable energy installations for practical exposure.
- Group discussions, workshops, and project-based learning activities.

## **7. Examination Structure:**



**Theory:****Weightage: 60 Marks**

Comprehensive evaluation of theoretical understanding in Renewable energy. Topics include fundamental concepts, principles, and theoretical frameworks.

**Practical:****Weightage: 40**

Marks Hands-on assessment of practical skills acquired during the course.

**Duration:**

The Examination shall be of 3 hours duration, ensuring ample time for a thorough assessment of both theory and practical components.

**Additional Components for Course Completion:****Presentations:**

Engage in enlightening presentations to showcase your grasp of specific Renewable energy topics. Provides an opportunity for effective communication and knowledge dissemination.

**Seminars:**

Participate in seminars, delving deeper into specialized areas of Renewable energy. Fosters in-depth exploration and discussion of advanced concepts.

**Short Project:**

Undertake a short project related to astrophysics, allowing practical application of learned concepts. Encourages independent research and project management skills.

**8. Course Passing Criteria:**

To successfully pass the course, a candidate must achieve the following: Obtain a minimum of 35% of the total marks in both theory and practical components separately. Successfully complete presentations, seminars, and the short project. This comprehensive assessment approach ensures a well-rounded evaluation, encompassing theoretical knowledge, practical skills, and the ability to communicate and apply astrophysical concepts in various formats.



## 9. Reference books

- "Renewable Energy: Power for a Sustainable Future" by Godfrey Boyle
- "Wind Energy Explained: Theory, Design and Application" by James F. Manwell, Jon G. McGowan, and Anthony L. Rogers
- "Solar Energy Engineering: Processes and Systems" by Soteris A. Kalogirou
- "Biomass for Renewable Energy, Fuels, and Chemicals" by Donald L. Klass
- "Geothermal Power Plants: Principles, Applications, Case Studies, and Environmental Impact" by Ronald DiPippo

## 10. Contact details

To know more about course at following contact details

**Dr. Vijaykiran N. Narwade** (Course coordinator)  
Department of Physics and Electronics,  
NES Science college, Nanded.  
Email id : [vkiranphysics@gmail.com](mailto:vkiranphysics@gmail.com)  
Mobile no. : +919765734431





**A Report  
of  
Certificate Course  
on**



**"BASICS OF ELECTRONICS"**

**Academic Year 2021-2022**

**Duration of the Course**

**17/02/2022-18/04/2022**

**Department of Physics & Electronics**

**N.E.S. Science College, Nanded**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(Reaccredited with "A" grade by NAAC with (CGPA3.38)3<sup>rd</sup> Cycle, CPE Status, DST-FIST,  
Best College Award (SRTMUN) NIRF 72<sup>nd</sup> Ranking (Year-2017)  
Website: <http://www.sciencecollegenanded.org/>

**Course coordinator  
Mr. Shrikant R. Dulewad**

**PRINCIPAL**  
N.E.S. Science College, Nanded

## PREAMBLE:

The student's employment should be the ultimate goal of their education. An enormous demand for electrical devices has emerged with India's emergence as a major global economy. A large demand for skilled labor in the field of electronics system design has arisen from the government of India's National Policy on Electronics and Made in India program, which has led to the establishment of numerous enterprises in the electronics sector. We at Science College, Sneh Nagar, Nanded regularly holds workshops, seminars, guest lectures, mock interviews, debate competitions, poster presentation competitions etc. The Physics & Electronics Department started offering a Certificate Course in "Basic Electronics Lab Training" in 2022 to prepare students for the problems of finding employment.

## OBJECTIVES OF THE CERTIFICATE COURSE:

- To enable current and prospective physics and electronics graduates, postgraduates, in the electronics sector to define, design, develop, and test electronic products.
- The key competency gap that has to be filled in order to design, produce, and market cutting-edge electronics goods will be filled by this course.
- To build up confidence in students to face interviews successfully.
- To foster creative skills among the students.



### COURSE OUTCOME:

- On successful completion of the Course, the Participants shall be able to specify, Design, Develop and Test electronic Products.
- Get exposure to industrial design of Electronic products student will be able to face interviews to get job.
- Students will try to acquire the soft skills.

### ORDINANCES FOR CERTIFICATE COURSE:

- The Certificate Course in Certificate Course in **Basics of Electronics** started with keeping view of 'Career Oriented Certificate Course' will follow ordinances.
- Number of Students per batch are 20.
- The admission/ examination shall be given to any candidate who has passed 10+2 examination with at least 45% marks in aggregate in Science.
- The candidate after passing examination will be awarded a Certificate for the Course.
- Every candidate will require attending minimum of 75% lectures/ periods delivered in the class.
- The candidate must obtain 35% of the total marks in theory and practical separately to pass the course.
- Candidates will be offered English as the medium of Instructions/ Examination.





## SYLLABUS OF THE COURSE

TITLE OF COURSE: Certificate Course on Basics of Electronics

Course will be of 04 Credits; each Credit will have 15 hours.

Unit	Topic	Credit
I	Identification of Electronic and Electrical Components	I
II	Applications of various electronic components in laboratory development	
III	Function Generator and Cathode Ray Oscilloscope Operations	I
IV	Growth of Skills	
	<b>Practical</b>	<b>II</b>
	<b>Total</b>	<b>IV Credit</b>



## COURSE STRUCTURE

**Subject: Physics & Electronics Department**

Title of Course: **Certificate Course in Basics of Electronics**

Marks-100

Hours-60

Duration: **2 Month**

### Syllabus of the Course

#### UNIT-I Identification of Electronic and Electrical Components

1. Vacuum tubes
2. Resistors
3. Capacitors
4. Batteries ,switches
5. Diodes
6. Transistors
7. Integrated chips
8. Bread board
9. Voltage supplies
10. Multimeters

#### UNIT-II Applications of Various Electronic Components in Laboratory Development.

1. Use of resistors and capacitors in a circuit
2. Charging and discharging of capacitors
3. Uses of transistors transistor connections
4. Uses of diodes
5. Filter circuits.
6. Zener diodes
7. Voltage regulators



### **UNIT-III Function Generator and Cathode Ray Oscilloscope Operations**

1. Familiarization of Function Generators.
2. Operation of Function Generator.
3. Identification of CRO knobs.
4. Testing of CRO and PROBES.
5. Measurements using CRO.

### **UNIT-IV Growth of Skills**

1. Soldering of electronic components
2. Full wave & bridge rectifiers.
3. Transistor Diode based circuits.

#### **Practical**

- Lab Practical based on the theory.

#### **Modality of Assessment**

- Theory – 60 Marks
- Practical – 40Marks
- Duration – The Examination shall be of 3 hours duration.



# Brochure

## ABOUT THE INSTITUTION :

Nanded Education Society's Science College, Nanded, one of the oldest single faculty science college was established by great visionary and leader of Hyderabad liberation struggle, Poojya Swami Raviinand Teerthi in 1950. This institution has been accredited with 'A' Grade by National Assessment and Accreditation Council (NAAC) with CGPA 3.38 (third cycle). The college is imparting quality Science Education in the regional Maharashtra for last six Decades. The college provides education in 13 science disciplines with 29 subject combinations having adequate vocationalization and job oriented courses. The institute run some P.G. Courses, the college has excellent research ambience. The alumni of this college are spread all over the world in diversified fields and making valuable contribution toward scientific and social development.

## SALIENT FEATURES OF DEPARTMENT OF PHYSICS AND ELECTRONICS:

- Recognized research centre
- Conducting research in the field of physics & electronics (electronics, acoustics & ultrasonic properties)
- Ugc sanctioned minor research projects
- More than 10 students have been awarded ph.d
- Research papers published in national and international journals - more than 100
- P.G. course in physics
- Dedicated Vocational Electronics Lab
- Hobby Workshop Lab

## About the Certificate Workshop

This workshop highlights that quality education must aim to develop good, thoughtful, well rounded and creative individuals which can be achieved through holistic & multidisciplinary education with the freedom for students to shape studies of their choice. Keeping in view futuristic approach we designed a certificate course for the students who have completed their 12<sup>th</sup> Board Exams and have enrolled for the UG science course. It is designed to teach the basic elements of electronics, primary components of integral circuits and various simple circuit components such as - power supplies, capacitors, resistors and inductors. This online electronics course enables student to acquire professional skills as per own comfort and seating at own pace with industry standard study materials and qualified instructors.

## Preamble

The student's employment should be the ultimate goal of their education. An enormous demand for electronic devices has emerged with India's emergence as a major global economy. A large demand for skilled labor in the field of electronics system design has arisen from the government of India's National Policy on Electronics and Made in India program, which has led to the establishment of numerous enterprises in the electronics sector. We at Science College, Sachin Nagar, Nanded regularly holds workshops, seminars, guest lectures, mock interviews, debate competitions, poster presentation, competitions etc. The Physics & Electronics Department started offering a Certificate Course in "Basic Electronics Lab training" in 2022 to prepare students for the problems of finding employment.

## Objectives of Certificate Course

To enable current and prospective electronics graduates, postgraduates in the electronics sector to derive design, develop and test electronic products. The key competency gap that has to be filled in order to design, produce, and market consumer electronics goods will be filled by this course. The competence in students to face interviews and to acquire skills among the students.

## PATRONS

Hon'ble Dr. Venkatesh Kabde  
President,

Nanded Education Society, Nanded

Hon'ble C.A. Dr. Pravin Patil  
Vice-President,

Nanded Education Society, Nanded.

Hon'ble Sarojanand Patil  
Secretary,

Nanded Education Society, Nanded

Hon'ble Shri. Prasad Agrewal  
Joint-Secretary,

Nanded Education Society, Nanded

## Convener

Dr. D. C. Gawar  
Principal

Science College, Nanded

## Course Co-ordinator

Mr. Shrikant B. Dholewad  
Assistant Professor, Electronics  
Department of Physics and Electronics  
Science College, Nanded



Nanded Education Society's

## Science College, Nanded

Recognized with 'A' Grade by NAAC with CGPA 3.38 in third cycle

## Certificate Course

in

## "Basics of Electronics"

From 17<sup>th</sup> February 2022



## DEPARTMENT OF PHYSICS & ELECTRONICS

## Course Outcome

On successful completion of this course, the Participants shall be able to explain theory, design and test electronic Products. They are expected to identify Design of Electronic Products Systems as the ability. Our objectives are to help students to acquire following skills:

## Ordnances for Certificate Course

- The Certificate Course in Certificate Course in Basics of Electronics started with keeping view of Career Oriented Certificate Course, with follow ordnances.
- Number of Students per batch: 25
- The admission examination shall be given to any candidate who has passed 12<sup>th</sup> Examination with at least 45% marks in aggregate in Science.
- The candidate after passing examination will be awarded a Certificate of the Course.
- Every candidate will receive a minimum of 75% lectures, provide delivered in the class.
- The candidate must obtain 75% of the total marks in theory and practical separately to pass the course.
- Candidate will be offered English/Marathi as the medium of instructions and for Examination medium is in English Language only.

## Modality of the Course

- Theory - 60 Marks
- Practical - 40 Marks
- Duration - The Examination shall be of 3 hours duration.

## Theory Paper Question Pattern

- There shall be 3 questions, each of 20 marks. On Each Unit there will be 1 question.
- All questions shall be compulsory with internal choice within the question.
- Terms for Practical Examination

Sr. No.	Particulars	Marks
	Practical Exam	40
	Skill Acquired	10
	Total	105

## Rules of the Course

- The candidate requires to attend 75% Lectures periods.
- The Candidate must obtain 75% of the total marks in theory and practical.
- Candidate will be offer English/Marathi as a medium of instructions for Examination medium is in of English Language only.

## Eligibility

- Students who have passed 12<sup>th</sup> Board Examinations in Science Stream

## Training Duration

- Training Duration: 60 Days (2 Monthly)
- Number of students: 25 Students Batch
- Theory: 30 Hours
- Practical: 40 hours



The Basic

Electronic Components





**A**  
**Certificate Course**  
**in**



**“Fiber Optics Communication”**

**Academic Year 2019-2020**

**Duration of the Course**

**02/08/2019-30/09/2019**

**Course coordinator**  
**Mr. Avinash K. Ghadge**

**Department of Physics & Electronics**

**N.E.S. Science College, Nanded**

**(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)**  
**(Reaccredited with “A” grade by NAAC with (CGPA3.38) 3<sup>rd</sup> Cycle, CPE Status, DST-FIST,**  
**Best College Award (SRTMUN) NIRF72<sup>nd</sup> Ranking (Year-2017)**  
**Website: <http://www.sciencecollegenanded.org/>**

## Syllabus of the Course

### UNIT-I INTRODUCTION TO OPTICAL FIBERS

Introduction-general optical fiber communication system- basic optical laws and definitions- optical modes and configurations -mode analysis for optical propagation through fibers-modes in planar wave guide-modes in cylindrical optical fiber-transverse electric and transverse magnetic modes fiber materials-fiber fabrication techniques-fiber optic cables-classification of optical fiber-single mode fiber-graded index fiber.

### UNIT-II TRANSMISSION CHARACTERISTIC OF OPTICAL FIBER.

Attenuation-absorption --scattering losses-bending losses-core and cladding losses-signal dispersion --inter symbol interference and bandwidth-intra modal dispersion-material dispersion-waveguide dispersion-polarization mode dispersion-intermodal dispersion-dispersion optimization of single mode fiber-characteristics of single mode fiber-R-I Profile- cutoff wave length-dispersion calculation-mode field diameter

### UNIT-III OPTICAL SOURCES AND DETECTORS

**Sources:** Intrinsic and extrinsic material-direct and indirect band gaps-LED-LED structures-surface emitting LED-Edge emitting LED-quantum efficiency and LED power-light source materials-modulation of LED-LASER diodes-modes and threshold conditions -Rate equations-external quantum efficiency-resonant frequencies-structures and radiation patterns-single mode laser-external modulation-temperature effort.

**Detectors:** PIN photo detector -Avalanche photo diodes-Photo detector noise-noise sources-SNR-detector response time-Avalanche multiplication noise-temperature effects-comparisons of photo detectors.

### UNIT-IV OPTICAL RECEIVER, MEASUREMENTS AND COUPLING

Fundamental receiver operation-preamplifiers-digital signal transmission-error sources-Front end

amplifiers-digital receiver performance-probability of error-receiver sensitivity-quantum limit. Optical power measurement-attenuation measurement-dispersion measurement- Fiber Numerical Aperture Measurements- Fiber cut- off Wave Length Measurements- Fiber diameter measurements-Source to Fiber Power Launching-Lensing Schemes for Coupling Management-Fiber to Fiber Joints-LED Coupling to Single Mode Fiber Splicing-Optical Fiber connectors.



## COURSE OUTCOME:

On successful completion of the Course,

- Participant will learn about advanced communication system
- Participant will gain expertise in handling fiber optics tools
- Considering the vast job avenues in the domain of fiber optics, he/she will be able to grab the employability
- The Participants shall be able to understanding of optical fiber communication link, structure, propagation and transmission properties of an optical fiber.

## ORDINANCES FOR CERTIFICATE COURSE:

- The Certificate Course in Fiber optic communications started with keeping view of 'Career Oriented Certificate Course' will follow ordinances.
- Number of Students per batch are 20.
- The admission/ examination shall be given to any Candidate who is enrolled in UG & PG Science Course.
- The candidate after passing examination will be awarded a Certificate for the Course.
- Every candidate will require attending minimum of 75% lectures/ periods delivered in the class.
- The candidate must obtain 40% of the total marks in theory and practical separately to pass the course.
- The medium of Instructions/ Examination of course will be English.



NANDED EDUCATION SOCIETY'S  
**SCIENCE COLLEGE, NANDED**

(Re-accredited with "A" grade by NAAC with CGPA 3.38, DST-FIST, CPE Status, Best College Award) P. O. Box No. 62, Sneh Nagar, Nanded - 431605

Website: [www.sciencecollegenanded.org](http://www.sciencecollegenanded.org) Email: [principal@sciencecollegennd.org](mailto:principal@sciencecollegennd.org)

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**DEPARTMENT OF PHYSICS & ELECTRONICS**

Date:-03/10/2019

**NOTICE**

All the students enrolled in Certificate course on "fiber optics communication" are hereby informed to attend the examination scheduled on 04/10/2019 from 9am-12pm.



*Prinath*  
Course Coordinator





NANDED EDUCATION SOCIETY'S  
 **SCIENCE COLLEGE, NANDED**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**CERTIFICATE COURSE**

IN

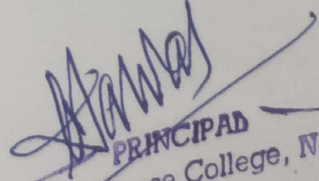
**SERICULTURE**

ORGANIZED BY

**DEPARTMENT OF ZOOLOGY**

**Science College, Nanded**

**2023-24**

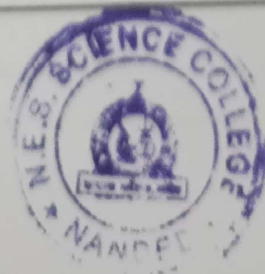
  
PRINCIPAL  
V E S. Science College, Nanded

## OBJECTIVES OF THE CERTIFICATE COURSE:

1. To provide judicious mix of skills relating to a profession and appropriate content of general education.
2. To ensure that the students have adequate knowledge and skills so that they are work ready at each exit point of the program.
3. To provide flexibility to the students by means of pre-defined entry and exit points.
4. To integrate NSQF within the UG level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.
5. To provide vertical mobility to students coming out of 10+2 vocational subjects.
6. Global mobility of skilled work force from India through international equivalence of NSQF.

## COURSE OUTCOME:

1. Demonstrate the process of cultivating mulberry trees for feeding silkworms.
2. Describe the process of preparing for rearing silkworm.
3. Demonstrate the process of incubating silkworm eggs and rear larvae.
4. Demonstrate the process of performing pest and disease management during sericulture.
5. Demonstrate the process of maintaining pupae, harvesting and processing cocoons.



COURSE STRUCTURE  
Subject: ZOOLOGY DEPARTMENT  
Title of Course: SERICULTURE

Marks - 100

Hours - 90

Duration: 3 Months

Syllabus of the course

**UNIT - I : MORPHOLOGY OF MORICULTURE**

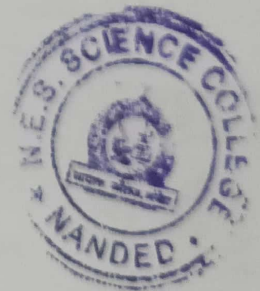
- 1) Mulberry - Origin and distribution -
- 2) Morphology of mulberry plant
- 3) Nutritional value of mulberry leaves.
- 4) Planting system-Irrigation -Manuring-Weeding-Inter alteration-Mulching-Pruning  
And Harvesting.

**UNIT II- PROPAGATION OF MULBERRY PLANT**

- 1) Seeding propagation -Vegetative propagation
- 2) Cutting-Layering and grafting
- 3) Diseases and pest of mulberry plant.

**UNIT III- MORPHOLOGY & ANATOMY OF SILKWORM**

- 1) Origin-Distribution-Classification of silkworm.
- 2) Lifecycle and morphology of Egg-Larva, Pupa and Adult.



- 3) Digestive silk gland–Reproduction–Excretion–Neuron and Endocrine gland–  
Reproduction.

#### UNIT IV- GRAINGE/REELING/ECONOMICS IN SERICULTURE.

- 1) Silkworm seed technology.
- 2) Silk technology.
- 3) Sericulture organization and economics.

#### UNIT V- SILKWORMS, HOST PLANT PEST & DISEASE MANAGEMENT

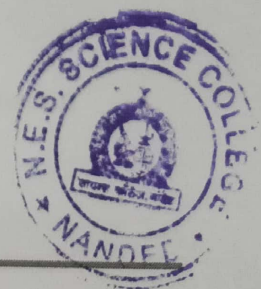
- 1) Mulberry and Non-Mulberry food plants diseases and their management.
- 2) Mulberry and Non-Mulberry host plant pests and their management.
- 3) Mulberry and Non-Mulberry Silkworm diseases, Pests, and their  
Management.

#### Practical

- 1) Visit to rearers' house and panel discussion with farmers.
- 2) Determination of pH and NPK in different soil samples.
- 3) Identification of silk, cotton, wool and synthetic fiber (nylon/polyester) by

Physical method-flame and microscopic test.

- 4) Determination of average size, Size deviation and maximum deviation of the  
given sample of silk.
- 5) Determination of good cocoon and defective cocoon percentage.
- 6) Determination of silk ratio percentage and estimated of Rendition.



- 7) Identification of different mulberry genotypes
- 8) Bio – Fertilizers – Identification, Preparation of panchagavya & Jeevamrutha.
- 9) Vermin Technology 4. By – Products of Mulberry and their utilization – Fruit jam preparation
- 10) Identification of mulberry diseases and pests Identification,

### Modality of Assessment

Theory – 60 Marks

Practical – 40 Marks

Duration – The Examination shall be of 3 hours' duration.

### Theory question paper pattern

- 1) There shall be 3 questions each of 20 marks. On Each Unit there will be 1 question
- 2) All question shall be compulsory with Internal choice within the question
- 3) Terms for Practical Examination.

Sr. No.	Particulars	Marks
1)	Practical Exam	25
2)	Assignment	10
3)	Viva	05

### Programme of the course

- 1) The candidate require to attend 75% lectures/ periods
- 2) The Candidate must obtain 35% of the total marks in theory and practical
- 3) Candidate will be offer English/ Marathi as a Medium of Instructions/ Examination.



NANDED EDUCATION SOCIETY'S  
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(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**Certificate Course**

**In**

**VERMICOMPOSTING**

**ORGANIZED BY**

**Department of Zoology  
Science College, Nanded**

**2023-24**

**PRINCIPAL**  
S. S. Science College, Nanded

## OBJECTIVES OF THE CERTIFICATE COURSE:

- To evaluate the fertility status of soil
- To diagnose plant problems and help in quality plant production
- To learn basic components of soil and their properties
- To provide the basis for fertilizer recommendation
- To promote employment and entrepreneurship opportunities

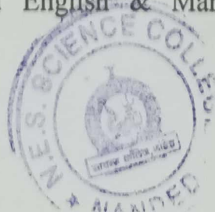
## COURSE OUTCOMES:

- Students will develop Earthworm handling skills
- Students will learn how to test the vermicompost and able to analyze organic and inorganic contents in vermicopost.
- Student will be able to build their own startup business.
- Students will give accurate guidance to the farmers
- Increasing farmer's profitability in the long-term.

## ORDINANCES FOR CERTIFICATE COURSE:

The Certificate Course in "Soil testing & Nutrient analysis" started with keeping view of "Career Oriented Certificate Course" will be covered under following ordinances.

1. Number of Students per batch are 25.
2. The admission/ examination shall be opened to any candidate who has passed 10+2 examination with at least 45% marks in aggregate in Science.
3. The candidate after passing examination will be awarded a Certificate
4. The supplementary examination shall be held in semester end or as fixed by the department.
5. Every candidate will be required to attend minimum of 75% lectures / periods delivered to that class.
6. The candidate must obtain 35% of the total marks in theory and practical separately to pass the course.
7. Candidates will be offered English & Marathi as the medium of Instructions/ Examination.



# COURSE STRUCTURE

Subject: Zoology

Title of Course: Certificate Course in Vermicomposting

ks - 100

Hours - 90

Duration: 3 Months

## Syllabus of the Course

### UNIT - I

1. Objectives of Vermicomposting - Waste management, soil detoxification and regeneration and sustainable agriculture.
2. Role of earth worm in solid waste management. Vermicomposting for mitigating & managing environmental pollution.

### UNIT - II

1. Morphology & Classification of Earth worms. Reproduction & Life Cycle
2. Important features to identify the species of earthworms.
3. Life history of Earthworms (Earthworm Species *Eisenia foetida*) Biology of *Eisenia foetida*.

### UNIT-III

1. Frequent problems of Vermiculture. How to prevent and fix them.  
Enemies of Earthworms. Pests of Vermiculture





2. Control of predators, pests & diseases in Vermiculture
3. Study of Laboratory Setup
4. Soil Test Report & Fertilizer Recommendation
5. Preparation of Soil Test Summaries and Fertility Maps

#### UNIT-IV

1. Vermibeds - Preparation, Types, Maintenance & management of vermibeds
2. Harvesting & packing
3. Vermiwash – Preparation & uses Self Study

#### Practicals

1. Features to identify different types of earthworms
2. Study of Systematic position, habits, habitat & external characters of *Eisenia foetida*
3. Collection & study of Life stages & development of *Eisenia foetida*
4. Comparison of morphology & life stages of *Eisenia foetida* Study of Vermiculture, Vermiwash & Vermicompost equipments, devices Preparation Vermibeds, maintenance of vermicompost & climatic conditions.
5. Harvesting, packaging, transport and storage of Vermicompost and separation Study the effects of vermicompost & vermiwash on any two short duration cropplants
6. The working experience with Earthworm populations and their role in making manure
7. Identify appropriate site and prepare bed for vermicomposting Establishment of vermicomposting unit Pit method Establishment of vermicomposting unit Bed method





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**SCIENCE COLLEGE, Nanded**

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**Bridge Course**

**IN**

**"SCIENTIFIC WRITING WITH LATEX"**

**ORGANIZED BY**

**DEPARTMENT OF MATHEMATICS AND  
APPLIED MATHEMATICS**

**N. E. S. Science College, Nanded.**

**2022-23**

To,  
The Principal,  
N.E.S. Science College,  
Nanded.

Date: 18/09/2022

**Subject:** permission to conduct the Bridge Course in Scientific Writing  
with LaTeX from 20/09/2022.

Respected Sir,

As per above cited subject, we wish to start the Bridge Course in Vedic  
Mathematics for our Mathematics and Applied Mathematics students. This  
course will be helpful to students..

Kindly encourage us by permitting us to start the course in the upcoming  
semester.

Thank you.

*Permitted*  
*[Signature]*  
18/9/2022  
PRINCIPAL  
Science College, Nanded

Yours,

*[Signature]*

Mrs. V.D. Borgaonkar,  
Course Coordinator and Head,  
Department of Mathematics  
and Applied Mathematics.

ENCL: One copy of the Proposal.



## SYLLABUS OF THE COURSE

### TITLE OF COURSE: SCIENTIFIC WRITING WITH LATEX

Unit	Topic	No. of Lectures
I	Introduction to LaTeX, Installation of LaTeX, Layout Design, LaTeX input files, Input file structure, document classes, Packages, environments, page styles, typesetting texts, Fancy Header, tables	04
II	Inline math formulas and displayed equations, Math symbols, fonts, Delimiters, matrices, arrays, and Typesetting Mathematical formulae: fractions, Integrals, sums, products, etc. Producing Mathematical Graphics.	06
III	Document classes for paper writing, thesis, books, etc. Table of contents, index, hypertext, pdf pages, geometry, fancy header and footer, Verbatim, itemize, and enumerate, boxes, equation number. Creating Tables, inserting figures, enumeration lists, itemized lists, font effects, and inserting equations.	10
IV	Presentation in LaTeX Beamer class, beamer theme, frames, slides, pause, Overlay transparent, handouts, and presentation mode. Inserting references, Manual reference, Reference using BibTex, citing reference	10
Total :		30

#### REFERENCE BOOKS:

1. LATEX Tutorials A Primer, Indian TEX Users Group, Trivandrum, India, 2003 September.
2. Learning LATEX by Doing, Andre Heck, 2002.
3. The LaTeX Companion, M. Carter, B. van Brunt, second edition, Addison wisely, Pearson Education.

LaTeX, a document preparation system, is widely used for publishing in many scientific fields like mathematics, statistics, computer science, engineering, chemistry, physics, economics, linguistics, etc. It is a powerful and open-source system that provides numerous facilities for automating typesetting of the document: i.e. structuring page layout, listing and auto-numbering of sections, tables, figures, generating a table of contents, managing cross-referencing, citing, and indexing.

Unlike other WYSIWYG (What You See Is What You Get) editors, the content is written in plain text along with appropriate commands, thus, allowing the user to concentrate on the content rather than the aesthetics (the way it looks). The TeX typesetting program which LaTeX uses, was designed such that anyone can create good quality material with less efforts.

This course introduces the basic concepts of LaTeX. Participants taking this course will be able to create and design documents in LaTeX and presentations in Beamer with confidence.

### **Course Outcomes:**

1. Handle different types of documents.
2. Organize documents into different sections, subsections, etc.
3. Formatting pages (margins, header, footer etc.,)
4. Formatting text.
5. Write complex mathematical formulae.
6. Include tables and images.
7. Cross-referencing, bibliography, and Indexing.
8. Read error messages as and when required.
9. Create presentations using Beamer.

**Certificate of Participation:** The participants will be provided Certificates on successful completion of the course. 75% attendance is mandatory for all participants.

**Registration fee:** No Registration Fees.

**VENUE:** Computational Lab, Department of Mathematics, N.E.S. Science College, Nanded.



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**SCIENCE COLLEGE, NANDED**

(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
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**Bridge Course**

IN


**"VEDIC MATHEMATICS"**

ORGANIZED BY

**DEPARTMENT OF MATHEMATICS AND  
APPLIED MATHEMATICS**

**N. E. S. Science College, Nanded.**

**2023-24**

1   
**PRINCIPAL**  
N. E. S. Science College, Nanded.

Date: 5/08/2023

To,  
The Principal,  
N.E.S. Science College,  
Nanded.

**Subject:** permission to conduct the Bridge Course in Vedic Mathematics from  
07/08/2023.

Respected Sir,

As per above cited subject, we wish to start the Bridge Course in Vedic Mathematics for our Mathematics and Applied Mathematics students. This course will be helpful to students.

Kindly encourage us by permitting us to start the course in the upcoming semester.

Thank you.

Permitted  
5/8/2023  
PRINCIPAL  
Science College, Nanded

Yours,



Mrs. V.D. Borgaonkar,  
Course Coordinator and Head,  
Department of Mathematics  
and Applied Mathematics.

ENCL: One copy of the Proposal.

## **OBJECTIVES OF THE BRIDGE COURSE:**

1. To enable the learners to explore the power of Vedic Maths.
2. To make learners strong in Numerical Maths.
3. To enable learners to recognize and understand simple techniques of Arithmetic Calculations.
4. To train learners to use the ideas of Vedic Maths in daily calculations and make those calculations with accuracy and speed.

## **COURSE OUTCOMES:**

1. Handle different types of documents.
2. Organize documents into different sections, subsections, etc.
3. Formatting pages (margins, header, footer etc.,)
4. Formatting text.
5. Write complex mathematical formulae.
6. Include tables and images.
7. Cross referencing, bibliography, and Indexing.
8. Read error messages as and when required.
9. Create presentations using Beamer.

**CERTIFICATE OF PARTICIPATION:** The participants will be provided Certificates on successful completion of the course. 75% attendance is mandatory for all participants.

**REGISTRATION FEE:** No Registration Fees.

**VENUE:** Hall no. 10, Department of Mathematics, N.E.S. Science College, Nanded.



**SYLLABUS OF THE COURSE**  
**TITLE OF COURSE: VEDIC MATHEMATICS**

Unit	Topic	No. of lectures
I	History and Evolution of Vedic Mathematics, Introduction of Basic Vedic Mathematics Techniques in Multiplication (Special Case, Series of 9, Series of 1 etc), Tables etc., Comparison of Standard Methods with Vedic Methods.	05
II	Various techniques to carry out basic operations covering Addition, Subtraction, Multiplication, Division, Complements and Bases, Vinculum number, General multiplication (Vertically Cross-wise).	05
III	Multiplications by numbers near base, Verifying answers by use of digital roots, Divisibility tests, Division of numbers near base, Comparison of fractions.	05
IV	Applications of Vinculum, Different methods of Squares (General method, Base method, Duplex method etc.)	05
V	Cubes, Cube roots, Square roots, General division	05
VI	Quadratic Equations, Simultaneous Equations, Use of various Vedic Techniques for answering numerical aptitude questions from Competitive Examinations	05

**REFERENCE BOOKS:**

1. Bhatiya Dhaval, Vedic Mathematics Made Easy, Jaico Publishing House
2. Thakur Rajesh Kumar, Vedic Mathematics for students taking Competitive Examinations. Unicorn Books 2015 or Later Edition
3. Gupta Atul, Power of Vedic Mathematics with Trigonometry , Jaico Books
4. V. G. Unkalkar, Magical World of Mathematics (Vedic Mathematics), Vandana Publishers, Bangalore



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**SCIENCE COLLEGE, NANDED**  
(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**Certificate Course**  
IN  
**BIOFERTILIZER TECHNOLOGY**

**Organized By**  
**DEPARTMENT OF BOTANY, MICROBIOLOGY &**  
**BIOTECHNOLOGY**

**SCIENCE COLLEGE, NANDED**

**Academic Year: 2022-2023**



Date: 25/07/2022

To,  
**The Principal,**  
Science College, Nanded.

Subject: Regarding Sanction of Three months Certificate Course in **Bio-fertilizer  
Technology**

**Respected Sir,**

As per the above cited subject Three months Certificate course in **Bio-fertilizer  
Technology** is being conducted in the subject Agricultural Microbiology which is scheduled from 01/08/2022 to 02/11/2022. I kindly request to grant me permission for the same. The proposal and curriculum designed for the said course is attached herewith for your kind information.

Thanking You,

*P. S. Borkar*  
25/07/22

Yours Faithfully,

Dr. Prita S. Borkar

*Permitted*  
*Atwal*

Principal  
N.E.S. Science College  
Nanded



## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of the Course	<b>Certificate Course in “Biofertilizer Technology”</b>
2.	Eligibility for Admission	<b>Candidate who passed 10+2 examination with at least 55% marks in aggregate in Science</b>
3.	Passing Marks	<b>The candidate must obtain 35% of the total marks in theory and practical separately to pass the course</b>
4.	No. of Years/ Semester	<b>Three months</b>
5.	Level	<b>College</b>
6.	Pattern	<b>Semester</b>
7.	To be implemented from the Academic Year	<b>From Academic year 2022-23</b>



Coordinator  
Dr. Prita S. Borkar



Principal  
Dr. D. U. Gawai



<b>Sr. No.</b>	<b>Content</b>
<b>1</b>	Introduction to the course
<b>2</b>	Objectives of the Course
<b>3</b>	Ordinance
<b>4</b>	Syllabus of the theory Course
<b>5</b>	Syllabus of practical
<b>6</b>	Duration of course
<b>7</b>	Teaching methodology
<b>8</b>	Mode of Assessment



## **OBJECTIVES OF THE CERTIFICATE COURSE:**

1. To provide judicious mix of skills relating to a profession and appropriate content of general education.
2. To ensure that the students have adequate knowledge and skills so that they are work ready at each exit point of the program.
3. To provide flexibility to the students by means of pre-defined entry and exit points.
4. To integrate NSQF within the UG level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.
5. To provide vertical mobility to students coming out of 10+2 vocational subjects.
6. Global mobility of skilled work force from India through international equivalence of NSQF.

## **COURSE OUTCOME:**

- Student enables to gain knowledge about production of Biofertilizer.
- Students will learn to know different microorganisms used in production of Biofertilizer.
- Students learn about various techniques of Biofertilizer production and their application in agricultural fields after completion of the certificate course.
- The aim of this certificate course is to make student entrepreneur and start his industry.



1. The candidate must require to attend 75% lectures/ periods & practicals.
2. The Candidate must obtain 35% of the total marks in theory and practicals.
3. Candidate will be offering English as a medium of instructions/ examination

## SYLLABUS OF THE COURSE

**TITLE OF COURSE: BIOFERTILIZER TECHNOLOGY**

**Course will be of 04 Credits and total teaching hours will be 45**

Unit	Topic	Credit
<b>I</b>	<b>INTRODUCTION TO BIOFERTILIZERS</b>	<b>0.5</b>
<b>II</b>	<b>NITROGEN FIXING BACTERIA AS BIOFERTILIZERS</b>	<b>0.5</b>
<b>III</b>	<b>MYCORRHIZAL BIOFERTILIZERS</b>	<b>0.5</b>
<b>IV</b>	<b>ALGAL BIOFERTILIZES &amp; PHOSPHATE SOLUBILIZERS</b>	<b>0.5</b>
<b>V</b>	<b>PRACTICALS</b>	<b>02</b>
<b>Credits</b>	<b>Total</b>	<b>04</b>

## COURSE STRUCTURE

Subject: Agricultural Microbiology

Title of Course: **BIOFERTILIZER TECHNOLOGY**

Marks - 40

Hours - 45

Duration: 3 Months

### Syllabus of the Certificate Course

- UNIT I: INTRODUCTION TO BIOFERTILIZERS** 05
1. Definition of Biofertilizer and Chemical fertilizer
  2. General account of the microbes used as biofertilizers for various crop plants.
  3. Their advantages over chemical fertilizers.
- UNIT II: NITROGEN FIXING BACTERIA AS BIOFERTILIZERS** 15
1. **Symbiotic N<sub>2</sub> fixers: *Rhizobium*** - Legume/pulses plants and associated *Rhizobium* sp. Isolation, characteristics, types, inoculum preparation, mass production and field application of *Rhizobium* Biofertilizer.
  2. **Non - Symbiotic N<sub>2</sub> fixers Free living *Azotobacter*** - Isolation, characteristics, inoculum preparation, mass production and Field application of *Azotobacter* Biofertilizer.
- UNIT III: MYCORRHIZAL BIOFERTILIZER** 10
1. Mycorrhizae and their association with plants.
  2. Types of Mycorrhizae: Ecto and Endo Mycorrhizae; Arbuscular Mycorrhizae; VAM
  3. Isolation, inoculum preparation, mass production and Field application of mycorrhizal biofertilizer .
  4. Importance of mycorrhizae in biofertilizer production
- UNIT IV: ALGAL BIOFERTILIZER & PHOSPHATE SOLUBILIZERS** 15
1. General Characteristics of Algae: *Azolla*, *Frankia*, *Anabaena*, *Nostoc*
  2. Method of production of Algal biofertilizers
  3. Role of Algal biofertilizers in rice cultivation
  4. Field applications of Algal biofertilizers.
  5. Isolation of Phosphate solubilizing microbes, inoculum preparation, mass production, field Application.





## PRACTICALS:

1. Isolation and identification of Azotobacter from soil
2. Isolation and identification of Rhizobium from leguminous nodules
3. Azolla - Isolation, characterization, mass multiplication
4. Anabaena - Isolation, characterization, mass multiplication
5. Isolation and characterization of phosphate solubilizing bacteria
6. Demonstration of mycorrhizal association in soil.
7. Production of Rhizobium Biofertilizer
8. Production of Azotobacter Biofertilizer
9. Production of Mycorrhizal Biofertilizer
10. Production of Phosphate solubilizers.
11. Visit to biofertilizer industry.

## MODE OF ASSESSMENT:

### Assessment Criteria: Theory Examination

Sr. No.	Particulars	Marks
1	Theory Examination	40
2	Internal Evaluation	10
	<b>Total</b>	<b>50</b>

### Theory Question Paper Pattern:

- 1) The Theory examination shall be of **Three-hour** duration with **40 Marks**.
- 2) There shall be 4 questions each of 10 marks.
- 3) On Each Unit there will be 01 question.
- 4) All questions shall be compulsory with internal choice within the question.

### Assessment Criteria: Practical Examination

Sr. No.	Particulars	Marks
1	Practical Exam	45
2	Viva voce	05
	<b>Total</b>	<b>50</b>



### **Practical Examination Pattern:**

1. The Practical examination shall be of **Three-hour** duration with **50 Marks**.
2. There shall be 3 questions each of 15 marks.
3. Viva voce: 05 marks.

### **REFERENCES:**

1. Kannaiyan, S. (2003). Bioetchnology of Biofertilizers, CHIPS, Texas.
2. Mahendra K. Rai (2005). Hand book of Microbial biofertilizers, The Haworth Press, Inc. New York.
3. Reddy, S.M. (2002). Bioinoculants for sustainable agriculture and forestry, Scientific Publishers.
4. Subba Rao N.S (1995) Soil microorganisms and plant growth Oxford and IBH publishing co. Pvt. Ltd. NewDelhi.
5. Aggarwal SK (2005) Advanced Environmental Biotechnology, APH Publications
6. Verma, A. (1999). Mycorrhiza. Springer Verlag, Berlin.
7. Wallanda, T. et al. (1997). Mycorrhizae. Backley's Publishers,
8. Mahendra K. Rai (2005). Hand Book of Microbial Biofertilizers, The Haworth Press, Inc. New York.





**Patrons:**

**Hon. Dr. Venkatesh R. Kabde**

President  
Nanded Education Society, Nanded

**Hon. CA Dr. Pravin Patil**

Vice President,  
Nanded Education Society, Nanded

**Hon. Mrs. Shyamal D. Patki**

Secretary,  
Nanded Education Society, Nanded

**Ad. Praful Agrawal**

Joint Secretary,  
Nanded Education Society, Nanded

**Chief-Guest of the Inaugural  
Function**

**Hon. CA Dr. Pravin Patil**

Vice-President,  
Nanded Education Society, Nanded

**Convener:**

**Dr. D. U. Gawai**

Principal  
Science College, Nanded

**Co-Conveners:**

**Dr. L.P. Shinde**

Vice-Principal  
Science College, Nanded

**Dr. Aruna R. Shukla**

Vice-Principal  
Science College, Nanded

**Organizing Secretary:**

**Dr. Prita Shamrao Borkar**

Professor in Agri. Microbiology  
Dept. of Botany, Micro. and  
Biotechnology

**Nanded Education Society's  
SCIENCE COLLEGE,  
NANDED**

Tel: 02462-250 465, 251 648  
[www.sciencecollegenanded.org](http://www.sciencecollegenanded.org)



**Certificate Course**

On

**Bio-fertilizer Technology**

Organized by

Dept. Of Botany, Microbiology and  
Biotechnology

**1<sup>st</sup> Aug, 2022**

**Time: 11 a.m.**



Science College, Nanded is single  
y college, founded by a great  
ary and leader of Hyderabad  
tion struggle, Poojya Swami  
nand Teeth. The College is Re-  
died with 'A' grade by NAAC with  
, 3.38 in 3rd Cycle. It has secured  
72nd rank in 2017, DST-FIST, Best  
je award of SRTMUN in 2018 and  
warded with "College with Potential  
cellence [CPE]" by UGC.



### About the Certificate Course

Biofertilizer Technology is an ecofriendly technology which provides job opportunities, skill orientation, and has potential to attract the attention of the planners and policy makers to recognize this technology as among one of the most appropriate avenues for socio-economic development of a largely agrarian economy like India. Agriculture soils are continuously losing physical and chemical properties (imbalance of nutrients) and biological health. The use of microorganisms as bio-fertilizers has emerged as innovative technology for improving the soil fertility and plant growth.

This certificate course will provide an opportunity to the students to produce Bio-fertilizer on their own and use in agriculture.

### Organizing Committee:

Dr. B. D. Gachande  
Dr. S.R. Pingalkar  
Dr. A. S. Bansode  
Dr. S. L. Jadhav  
Dr. A.T. Shinde  
Dr. A.R. Shukla  
Dr. V. D. Borgaonkar  
Dr. K. S. Shillewar  
Dr. R.A. Muneshwar  
Dr. A.P. Borikar  
Shri. Gautam Waghmare

### Objectives of Course:

- To motivate students to develop their Skill in production of Bio-fertilizers.
- To prepare undergraduate and graduate Students for employment in Agro-industries.
- To promote the students to develop their Entrepreneur skills.
- To make them aware about the importance of Organic farming using Bio-fertilizers.
- To have a working knowledge of Bio-fertilizer production and impart skills to local farmers.

### Target Group:

Academician UG and PG Students.

- **No registration fees**
- **Participants: maximum 25 students only**
- Certificates will be given to the registered participants



**Nanded Education Society's**  
**SCIENCE COLLEGE, NANDED**  
(Affiliated to Swami Ramanand Teerth Marathwada University, Nanded)  
(NAAC Re-accredited "A" grade CGPA 3.38, Recipient of DST-FIST, CPE Status)

**Certificate Course**  
IN  
**BIOFERTILIZER TECHNOLOGY**

**Organized By**  
**DEPARTMENT OF BOTANY, MICROBIOLOGY &**  
**BIOTECHNOLOGY**

**SCIENCE COLLEGE, NANDED**

**Academic Year: 2021-2022**



To,

The Principal,  
Science College, Nanded.

Date: 20/07/2021

Subject: Regarding Sanction of Three months Certificate Course in **Bio-fertilizer  
Technology**

Respected Sir,

As per the above cited subject Three months Certificate course in **Bio-fertilizer  
Technology** is being conducted in the subject Agricultural Microbiology which is scheduled from 01/08/2021 to 30//10/2021. I kindly request to grant me permission for the same. The proposal and curriculum designed for the said course is attached herewith for your kind information.

Thanking You,

*Permitted*  
*[Signature]*  
Principal  
N.E.S. Science College.  
Nanded

*P. S. Borkar*  
*20/7/21*

Yours Faithfully,

Dr. Prita S. Borkar



To,  
**The Principal,**  
Science College, Nanded.

Date: 02/02/2022

Subject: Regarding Sanction of Three months Certificate Course in **Laboratory  
Techniques in Microbiology.**

**Respected Sir,**

As per the above cited subject Three months Certificate course in **Laboratory  
Techniques in Microbiology** is being conducted in the subject Agricultural Microbiology  
which is scheduled from 06/02/2022 to 06//04/2022. I kindly request to grant me permission  
for the same. The proposal and curriculum designed for the said course is attached herewith for  
your kind information.

Thanking You,

*Permitted*  
*[Signature]*

Principal  
N.E.S. Science College.  
Nanded

*P. S. Borkar*  
*02/2/22*

Yours Faithfully,  
Dr. Prita S. Borkar





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**Certificate Course**  
IN  
**BIOFERTILIZER TECHNOLOGY**

**Organized By**  
**DEPARTMENT OF BOTANY, MICROBIOLOGY &  
BIOTECHNOLOGY**

**SCIENCE COLLEGE, NANDED**

**Academic Year: 2022-2023**





## Short Information of Course

Sr. No.	Criteria	Particulars
1.	Title of the Course	<b>Certificate Course in "Biofertilizer Technology"</b>
2.	Eligibility for Admission	<b>Candidate who passed 10+2 examination with at least 55% marks in aggregate in Science</b>
3.	Passing Marks	<b>The candidate must obtain 35% of the total marks in theory and practical separately to pass the course</b>
4.	No. of Years/ Semester	<b>Three months</b>
5.	Level	<b>College</b>
6.	Pattern	<b>Semester</b>
7.	To be implemented from the Academic Year	<b>From Academic year 2022-23</b>



Coordinator  
Dr. Prita S. Borkar



Principal  
Dr. D. U. Gawai



## **OBJECTIVES OF THE CERTIFICATE COURSE:**

1. To provide judicious mix of skills relating to a profession and appropriate content of general education.
2. To ensure that the students have adequate knowledge and skills so that they are work ready at each exit point of the program.
3. To provide flexibility to the students by means of pre-defined entry and exit points.
4. To integrate NSQF within the UG level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.
5. To provide vertical mobility to students coming out of 10+2 vocational subjects.
6. Global mobility of skilled work force from India through international equivalence of NSQF.

## **COURSE OUTCOME:**

- Student enables to gain knowledge about production of Biofertilizer.
- Students will learn to know different microorganisms used in production of Biofertilizer.
- Students learn about various techniques of Biofertilizer production and their application in agricultural fields after completion of the certificate course.
- The aim of this certificate course is to make student entrepreneur and start his industry.



# COURSE STRUCTURE

Subject: Agricultural Microbiology

Title of Course: **BIOFERTILIZER TECHNOLOGY**

Marks - 40

Hours - 45

Duration: 3 Months

## Syllabus of the Certificate Course

### **UNIT I: INTRODUCTION TO BIOFERTILIZERS**

05

1. Definition of Biofertilizer and Chemical fertilizer
2. General account of the microbes used as biofertilizers for various crop plants.
3. Their advantages over chemical fertilizers.

### **UNIT II: NITROGEN FIXING BACTERIA AS BIOFERTILIZERS**

15

1. **Symbiotic N<sub>2</sub> fixers: *Rhizobium*** - Legume/pulses plants and associated *Rhizobium* sp. Isolation, characteristics, types, inoculum preparation, mass production and field application of *Rhizobium* Biofertilizer.
2. **Non - Symbiotic N<sub>2</sub> fixers Free living *Azotobacter*** - Isolation, characteristics, inoculum preparation, mass production and Field application of *Azotobacter* Biofertilizer.

### **UNIT III: MYCORRHIZAL BIOFERTILIZER**

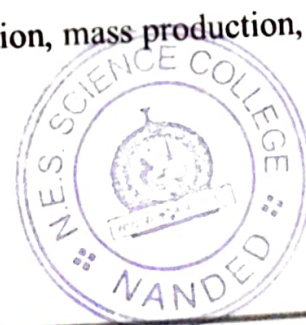
10

1. Mycorrhizae and their association with plants.
2. Types of Mycorrhizae: Ecto and Endo Mycorrhizae; Arbuscular Mycorrhizae; VAM
3. Isolation, inoculum preparation, mass production and Field application of mycorrhizal biofertilizer .
4. Importance of mycorrhizae in biofertilizer production

### **UNIT IV: ALGAL BIOFERTILIZER & PHOSPHATE SOLUBILIZERS**

15

1. General Characteristics of Algae: *Azolla*, *Frankia*, *Anabaena*, *Nostoc*
2. Method of production of Algal biofertilizers
3. Role of Algal biofertilizers in rice cultivation
4. Field applications of Algal biofertilizers.
5. Isolation of Phosphate solubilizing microbes, inoculum preparation, mass production, field Application.



## PRACTICALS:

1. Isolation and identification of Azotobacter from soil
2. Isolation and identification of Rhizobium from leguminous nodules
3. Azolla - Isolation, characterization, mass multiplication
4. Anabaena - Isolation, characterization, mass multiplication
5. Isolation and characterization of phosphate solubilizing bacteria
6. Demonstration of mycorrhizal association in soil.
7. Production of Rhizobium Biofertilizer
8. Production of Azotobacter Biofertilizer
9. Production of Mycorrhizal Biofertilizer
10. Production of Phosphate solubilizers.
11. Visit to biofertilizer industry.

## MODE OF ASSESSMENT:

### Assessment Criteria: Theory Examination

Sr. No.	Particulars	Marks
1	Theory Examination	40
2	Internal Evaluation	10
	<b>Total</b>	<b>50</b>

### Theory Question Paper Pattern:

- 1) The Theory examination shall be of **Three-hour** duration with **40 Marks**.
- 2) There shall be 4 questions each of 10 marks.
- 3) On Each Unit there will be 01 question.
- 4) All questions shall be compulsory with internal choice within the question.

### Assessment Criteria: Practical Examination

Sr. No.	Particulars	Marks
1	Practical Exam	45
2	Viva voce	05
	<b>Total</b>	<b>50</b>





**Patrons:**

**Hon. Dr. Venkatesh R. Kabde**  
President  
Nanded Education Society, Nanded

**Hon. CA Dr. Pravin Patil**  
Vice President,  
Nanded Education Society, Nanded

**Hon. Mrs. Shyamal D. Patki**  
Secretary,  
Nanded Education Society, Nanded

**Ad. Praful Agrawal**  
Joint Secretary,  
Nanded Education Society, Nanded



**Chief-Guest of the Inaugural Function**

**Hon. CA Dr. Pravin Patil**  
Vice-President,  
Nanded Education Society, Nanded

**Convener:**

**Dr. D. U. Gawai**  
Principal  
Science College, Nanded

**Co-Conveners:**

**Dr. L.P. Shinde**  
Vice-Principal  
Science College, Nanded

**Dr. Aruna R. Shukla**  
Vice-Principal  
Science College, Nanded

**Organizing Secretary:**

**Dr. Prita Shamrao Borkar**  
Professor in Agri. Microbiology  
Dept. of Botany, Micro. and  
Biotechnology

Nanded Education Society's  
**SCIENCE COLLEGE,  
NANDED**

Tel: 02462-250 465, 251 648  
[www.sciencecollegenanded.org](http://www.sciencecollegenanded.org)



**Certificate Course**

**On**

**Laboratory Techniques in  
Microbiology**

**Organized by**  
Dept. Of Botany, Microbiology and  
Biotechnology

**6<sup>th</sup> Feb, 2022**

**Time: 11 a.m.**

## ABOUT THE COLLEGE...

N.E.S. Science College, Nanded is single faculty college, founded by a great visionary and leader of Hyderabad liberation struggle, Poojya Swami Ramanand Teeth. The College is Re-accredited with 'A' grade by NAAC with CGPA 3.38 in 3rd Cycle. It has secured NIRF-72nd rank in 2017, DST-FIST, Best College award of SRTMUN in 2018 and also awarded with "College with Potential for Excellence [CPE]" by UGC.



## About the Certificate Course

Laboratory Techniques in Microbiology Certificate course is designed to acquire knowledge and gain understanding of concepts in microbiology, handling of microorganisms and techniques used in Microbiology. Learning, practicing professional skills in handling microbes and contaminants in laboratories and production sectors help students to apply their knowledge in pharma, food, agriculture, industries, and medical fields. This course will help students to pursue microbiological research, optimize research methods, and analyze outcomes by adopting scientific methods, thereby improving the employability of microbiology students.

### Organizing Committee:

Dr. B. D. Gachande  
Dr. S.R. Pingalkar  
Dr. A. S. Bansode  
Dr. S. L. Jadhav  
Dr. A.T. Shinde  
Dr. A.R. Shukla  
Dr. V. D. Bargaonkar  
Dr. K. S. Shillewar  
Dr. R.A. Muneshwar  
Dr. A.P. Borikar  
Shri. Gautam Waghmare

## Objectives of Course:

- To motivate students to develop their Skill in handling Laboratory equipments and learn techniques in Microbiology.
- To prepare undergraduate and graduate Students for employment in Microbiology and Pharmaceutical Industries.
- To promote the students to develop their skills in handling microorganisms.
- To make them aware about the importance of microbial techniques in different industries.

### Target Group:

Academician UG and PG Students.

### No registration fees

- **Participants: maximum 25 students only**
- Certificates will be given to the registered Participant