

સૌ રાષ્ટ્ર યુનિવર્સિટી



Re-Accredited Grade B by NAAC
(CGPA 2.93)

પરિપત્ર:-

P.G.D.F.S.T.

આથી સૌરાષ્ટ્ર યુનિવર્સિટી સંલગ્ન વિજ્ઞાન વિદ્યાશાખા હેઠળનો AIILSG, Mumbai ખાતે ચાલતો પી.જી. ડિપ્લોમા ઈન ફૂડ સાયન્સ એન્ડ ટેકનોલોજી “ વિષયનો અભ્યાસક્રમ ચલાવતી સંસ્થાને જણાવવાનું કે, ડીનશ્રી વિજ્ઞાન વિદ્યાશાખા ધ્વારા અભ્યાસ સમિતિ/વિદ્યાશાખાની બહાલીની અપેક્ષાએ મંજૂર કરવાની ભલામણ માન.કુલપતિશ્રીએ એકેડેમિક કાઉન્સિલની બહાલીની અપેક્ષાએ “ પોસ્ટ ગ્રેજ્યુએટ ડિપ્લોમા ઈન ફૂડ સાયન્સ એન્ડ ટેકનોલોજી “ વિષયનો (પંદર માસ) અભ્યાસક્રમ શૈક્ષણિક વર્ષ ૨૦૧૨-૧૩ થી અમલમાં આવે તે રીતે મંજૂર કરેલ છે.

તદ્ અનુસાર સંબંધીત સર્વેએ તે મુજબ તેનો અમલ કરવા વિનંતી.

બિડાણ :- ઉક્ત અભ્યાસક્રમ

નં.એકે/Sc./P.G.D.F.S.T./ ૬૧૨/૨૦૧૨
સૌરાષ્ટ્ર યુનિવર્સિટી કાર્યાલય,
યુનિવર્સિટી કેમ્પસ,
યુનિવર્સિટી રોડ,
રાજકોટ-૫
તા.૨૯-૮-૨૦૧૨

એકેડેમિક ઓફિસર

પ્રતિ,

- (૧) ડાયરેક્ટરશ્રી, AIILSG, Mumbai
- (૨) P.G.D.Food Science & Technology વિષયનો અભ્યાસક્રમ ચલાવતી સંસ્થાનાં વ્યવસ્થાપકશ્રી

નકલ સાદર રવાના :-

- (૧) કુલપતિશ્રી / કુલસચિવશ્રીના અંગત સચિવશ્રી, (૨) ડીનશ્રી વિજ્ઞાન વિદ્યાશાખા
- (૩) કો-ઓર્ડિનેટરશ્રી, IQAC જરૂરી કાર્યવાહી તથા જાણ અર્થે.
- (૪) પરીક્ષા નિયામકશ્રી, ઉક્ત અભ્યાસક્રમ ૮-નકલો સાથે જરૂરી કાર્યવાહી અર્થે
- (૫) પી.જી. વિભાગ (૬) જોડાણ વિભાગ (૭) સામાન્ય વિભાગ
- (૮) યુજીસી વિભાગ (૯) સિન્ડિકેટ વિભાગ

નકલ સાદર રવાના :- (જાણ સારું)

- (૧) ઉપસચિવશ્રી, શિક્ષણ વિભાગ, નવા સચિવાલય, ગાંધીનગર.
- (૨) ઉચ્ચ શિક્ષણ કમિશનરશ્રી, ડો.જીવરાજ મહેતા ભવન, બ્લોક નં.૧૨, ગાંધીનગર
- (૩) ગુજરાત રાજ્યની સર્વે યુનિવર્સિટીઓ તરફ...
- (૪) અંગત સચિવશ્રી, માન.મુખ્યમંત્રીશ્રીનું કાર્યાલય, નવા સચિવાલય, ગાંધીનગર
- (૫) માન. શિક્ષણમંત્રીશ્રી ના અંગત સચિવશ્રી, નવા સચિવાલય, ગાંધીનગર
- (૬) કન્વીનરશ્રી,
નોલેજ કોન્સોર્ટીયમ ઓફ ગુજરાત, K.C.G. બ્લોક નં.૧૨, ત્રીજો માળ, ડો.જીવરાજ મહેતા ભવન, ગાંધીનગર

SAURASHTRA UNIVERSITY



Re-Accredited Grade B by NAAC

(CGPA 2.93)

Faculty of Science Syllabus For

P. G. Diploma in Food Science & Technology
(P.G.D.F.S.T.) (15 Months)

(w.e.f. Academic Year 2012-13)

Website : www.saurashtrauniversity.edu

ALL INDIA INSTITUTE OF LOCAL SELF-GOVERNMENT
(RECOGNIZED BY THE GOVERNMENT AS
EDUCATIONAL INSTITUTION)

POST GRADUATE DIPLOMA IN FOOD SCIENCE & TECHNOLOGY (P.G.D.F.S.T)

Working Guidelines

ଅନିଆରୀ ଶିକ୍ଷା
ପ୍ରଦାନ କରିବା ପାଇଁ
ପ୍ରସ୍ତୁତ ହେଉଛି ଏହି
ନିୟମାବଳୀ।
ଅନିଆରୀ
ଶିକ୍ଷା
ପ୍ରଦାନ କରିବା ପାଇଁ

All India Institute of Local Self Government
F-Block, Bandra Kurla Complex, TPS Road No. 12,
Behind Teacher's Colony, Bandra East, Mumbai 400051.
Tel - (022) 26571713/14/15/0924/0973
Fax - (022)26572286
Email - anshetty@aiilsg.org Website- www.aiilsg.org



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1. Post Graduate Diploma in Food Science & Technology course- A Genesis

Globalization has made a tremendous impact on our lifestyle including our food preferences. Availability of food from all over the world even in remote corners of our country has resulted in a paradigm shift in our food preferences. This has stimulated terrific growth in food sector and many multinational companies have started catering to this demand for new foods. Thus there is an accelerated growth in food industries. But this has also created problems for the community, as people don't have any knowledge for evaluating the quality of food available. Hence there is a need for trained people in various food related issues like food sanitation, hygiene, food processing, Quality control etc.

A graduate program in chemistry does not equip the students for jobs requiring Quality analysis of food, Food inspectors etc. So All India Institute Of Local Self Government is offering Job-oriented Post Graduate Diploma course in Food Science & Technology. This course is offered after 10 +2 + 3 or graduation to train students specifically for the rigors of the jobs like Quality controllers, Food safety officer and others requiring knowledge of food related issues. The curriculum for the course is carefully structured with the following objectives.

- To equip the students with all aspects related to food like Food microbiology, Food Chemistry, Food Science, Food Microbiology, Food technology, Food Production Processing & Packaging among others.
- To train the students rigorously in all the practical aspects associated with food industry by incorporating on-the- Job training, Internship program and project in the course curriculum.
- To inculcate the skills demanded by the job responsibilities in a food industry.



2. Working guidelines- Background

Post Graduate Diploma in Food Science & Technology is a course conducted by AILSG all over India through its various Centers. In order to maintain uniformity for the benefit of students in conduct of the course, developing standardized working guidelines has become a need of the hour.

These working guidelines intend to guide the following persons who might be involved in the smooth running of the course.

1. Board of Studies and Examination Members.
2. Regional Directors.
3. Principals and Course coordinators of PGDFST course
4. Teaching Faculty
5. Administrators including A.O.S

These working guidelines give a glimpse into the following areas of the course for the above-mentioned key personnels.

1. Course curriculum and overall learning objectives
2. Course scheduling and administration
3. Examination scheme
4. Teaching methodology

The students can benefit in a great way by understanding syllabus, scheme of examination. The students can start their project work and OTJ training preparation



P G D F S T course- Overall design

Duration of the course: 15 months

(It includes 12 M of course lectures and practicals, around 1 M of industry visits etc., 1M project work and 2 M of OTJ (On-The-Job) training. Field visits cover practical aspects of core subjects for e.g. Food Technology and orientation into different industry segments.

On-the-job training will be in a Public Health Institute/Food analysis laboratory/agricultural university with Post Harvest Technology or Horticultural Processing Department/ Food Industry/ Food Services/ Food Retail Operations for 6 weeks.

Project can be experimental or a market survey with analysis under the guidance of a qualified teacher. Project work followed by a formal project Report is to be submitted by each student.

Core subjects : Total 8

(First 6 subjects having Theory and Practical, and remaining 2 with theory only.)

Theory classes, Industry specialist/Guest lectures and Practical exercises are planned for each. The course is designed to expose students to first hand knowledge of working of the Food Industry.

Paper 1: Advanced Nutrition

Paper 2: Advanced Microbiology

Paper 3: Food Science

Paper 4: Food Preservation & Packaging

Paper 5: Food Safety & Plant Sanitation

Paper 6: Advances in Food Technology

Paper 7: Instrumentation & Quality control

Paper 8: Food laws and Regulations



Course material (Reading notes) will be provided for the students only after the completion of admission formalities and as course progresses.

Additional study material, supplementary notes by faculty , when provided, should be availed by students at their own cost/shared cost.

It is essential to utilize library facility to -

1. Update General knowledge and food industry information
2. Reference books
3. Home issue text books, notes material and records



The list of core subjects and learning objectives for each are summarized in following table:

<u>Subject Title</u>	<u>Learning Objectives</u>
<i>Advanced Nutrition</i>	<i>Proximate Principles, Food habits, Nutrient content of foods, sensory evaluation of food, nutraceuticals, food fortification, functional foods</i>
<i>Advanced Food Microbiology</i>	<i>Role of microorganisms in Foods and Food borne infections, Microbial Deterioration of Specific Foods, Biofilms, SCP</i>
<i>Food Science</i>	<i>Purpose of food analysis, analysis of nutrients and determination of food adulteration, Reactions, Colour, Flavour, Additives</i>
<i>Food Preservation & Packaging</i>	<i>Causes of food spoilage, principles of different methods of food preservation, Newer Packaging techniques</i>
<i>Food Safety & Plant Sanitation</i>	<i>Sources of food contamination. Awareness regarding food safety measures adopted in food industry, Ergonomics</i>
<i>Advances in Food Technology</i>	<i>Awareness of food manufacturing practices, Nanotechnology, Enzyme technology, Biosensors, Organic farming</i>
<i>Instrumentation & Quality control</i>	<i>The basic responsibility of a quality assurance department and learn the quality control measures to be implemented in food industry, Instrument working, principles, HACCAP</i>
<i>Food laws and Regulations</i>	<i>Role of Government in ensuring Food safety to the consumer and role of International Organization in ensuring the Food safety, FSSR(2011)</i>



5. Course Scheduling & Administration



5a. Course Schedule Diagram

Subject	Month's Number (Total 15 Months)							15
	1-2	3-4	5- 6	6-7	8-10	11-12	13-14	
Advanced Nutrition								Final Univ- ersity Exam
Advanced Food Microbiology								
Food Science								
Food Preservation & Packaging								
Food Safety & Plant Sanitation								
<i>Advances in Food Technology</i>								
<i>Instrumentation & Quality control</i>								
<i>Food laws and Regulations</i>								
On the Job Training								

*Final Practical, Theory and Project viva to be held in 15th Month from course beginning.

* Project work shall be completed and submitted within 12 months of theory and practical work after which the student shall be eligible to go for OTJ training in the industry.



- **Theory**

Course will be conducted for minimum 5 days a week. Special lectures such as Industry/ Specialists Lectures and Seminars may be arranged on other days. Students need to attend both regular and guest lectures.

- **Practical**

One Practical session should be of average 3 hours duration. However, based on the need and objective of the topic can be extended upto 3 to 4 hours, e.g. Microbiology techniques. The practicals include visits to outside institutes/ facilities for some subjects.

- **On – The – Job training**

Students will have to undergo 6 weeks of training attached to a Food Industry/ Retail Services/ Institutional Kitchens/ Fast Food Retail and such other units.

- **Project**

Students will have to select a topic from any of the subjects they have studied and collect data for a primary study. Faculty members will be assigned a minimum of 5 students for guidance. Students will have an internal guide from the institute and an external guide from the food industry. The evaluation would be equally shared by internal and external guide. The internal guide would be the major coordinator for the project work.

5b.Faculty Qualification

Course Coordinator	Preferably Ph.D Food Science and Nutrition / Food Technology / Food Microbiology OR M.Sc Food Science and Nutrition / Food Technology / Food Microbiology with 1 year teaching experience Or
Minimum Qualification of Faculty	
Advanced Nutrition	M.Sc. Food Science and Nutrition
Advanced Food Microbiology	M.Sc Food Microbiology
Food Science	M.Sc. Chemistry
Food Preservation & Packaging	M.Sc. Food Science and Nutrition / Food Technology
Food Safety & Plant Sanitation	M.Sc. Food Science and Nutrition / Food Technology
<i>Advances in Food Technology</i> <i>Food laws and Regulations</i>	Graduate in engineering / Post graduate in science subjects with diploma in industrial safety from Central Labour Institute (where available), Experts/Professionals from the industry/field, senior officials working in industry like Packing, Bottling, Food Processing, Catering, Hospitality, Big Bazaars, Malls, Consumer Guidance Society, AGMARK and Food Safety Regulatory bodies, etc. Qualified
<i>Instrumentation & Quality control</i>	For all faculty members Industry Experience of 3 years & above is preferable.



5c. Code of conduct for visiting faculties/ lectures/ practical facilitators.

1. Each faculty will be responsible to complete given curriculum in allotted hours along with internal tests and assignments completion.
2. Each faculty shall utilize allocated tours full and fruitfully.
3. A formal, feedback of faculty members teaching from each student and/ or principal/ eminent members of All India Institute of Local Self Government shall be sought confidentially for each subject.
4. In case students are unable to develop an understanding of the subject, the faculty must take special efforts to improve students understanding for next consecutive 2 classes. Otherwise, a special action to be designed jointly with principal/ eminent staff of All India Institute of Local Self Government.
5. Each faculty to e-mail / arrange notes of each lecture/ practical in advance and should be handed to All India Institute of Local Self Government.
6. Lectures or practicals at other than scheduled time, if needed must be arranged with consideration to students convenience full attendance and prior communication to principal.
7. To rectify deficiency or for better understanding by students, extra lectures/ practicals can be allowed in consultation with the principal. All India Institute of Local Self Government shall determine payment options if necessary for such extra hours.
8. In case faculty member is not able to conduct class/ practical on a particular day, intimation of the same should be given to All India Institute of Local Self Government/ Principal minimum 3 days in advance, except emergency.
9. Each faculty member must submit email ID, latest contact nos. and updated C.V. to Principal/ All India Institute of Local Self Government. They must attend special coordination meetings (bimonthly) with Principal/ All India Institute of Local Self Government to effectively improve overall P G D.F. Tech course delivery.
10. Each faculty member is requested to read working guidelines thoroughly and carefully and to submit a signed acceptance of the above.



5d. Declaration by teaching/visiting faculty

(To be signed, detached and handed over to AILSG)

Name :

Contact Nos. 1. Cell No. (Latest)

2. Landline (Latest)

Email ID:

Is latest CV submitted ?

YES / NO

Subject being taught

Theory/ Practical ?

.....
.....

I hereby declare that I have read the working guidelines procurement of All India Institute of Local Self Government for P G D.F.Tech Course and accept the same. I will try my best and support AILSG to make this course successful.

Signature & Date :

Name & Place:



5e. Entry formalities for students

Commencement of the Course: June every year

Minimum Qualification: Graduate in Science pass with subjects viz. Chemistry, Physics, Botany, Zoology, Microbiology or Home Science. Candidates with this qualification and Sanitary Inspectors Diploma from AILSG will be given preference.

Age: No age limit

Fee structure: As prescribed by AILSG for a particular year. Typically, admission to course includes registration fee, course fee (full or in agreed installments), library membership fee.

The fees, once paid, are on non-refundable basis.



6a. Teaching hours

(Theory)

Total : 669 hours

Paper No	Title	Teaching Hours (Clock Hours)
I	Advanced Nutrition	80
II	Advanced Food Microbiology	86
III	Food Science	82
IV	Food Preservation & Packaging	86
V	Food Safety & Plant Sanitation	68
VI	<i>Advances in Food Technology</i>	93
VII	<i>Instrumentation & Quality control</i>	80
VIII	<i>Food laws and Regulations</i>	80
IX	General course and exam, project guidance	8
X	Personality Development training	6



Paper No	Title	Teaching Hours (Clock Hours/ As feasible)
I	Advanced Nutrition	57
II	Advanced Food Microbiology	60
III	Food Science	50
IV	Food Preservation & Packaging	62
V	Advances in Food Technology	46
VI	<i>Instrumentation & Quality control</i>	26

Grand total: 970 hours



6b. Teaching Methodology

- **Lectures:**

Should be innovative with proper audio visual aid like charts, OHP, Models and power Point presentation to enhance the effectiveness of classroom teaching. Interactive teaching methods should be used to ensure participation and understanding by the students.

- **Assignments:**

Minimum one assignment should be given. It should be theory and practical oriented and designed to encourage self-study and to broaden the knowledge of the students. The assignments should involve usage of information technology to supplement their knowledge. Use of computers in class room should be part of the course.

- **Internal tests:**

A minimum of 2 internal tests have to be conducted to evaluate the degree of comprehension in students and to suggest improvements in methods of teaching to the faculty.

(Internal tests may include objective question paper/ quiz/ write up/ presentation of Information collected.)

- **Staff Appraisal:**

Annual staff appraisal by students, staff and the principal will help to improve the teaching standard in the Institute.

- **Attendance:**

Minimum 75% of attendance in theory as well as Practical. Completion of 6 minimum Assignments (Reference to 8 core subjects) is mandatory to be eligible for final examination. 100% attendance is must for on- the- job training.



6d. On-The-Job training and Project Work

On the job training:

6 – 8 weeks

Objectives:

1. To expose the student to practical aspects of working of a food processing industry
2. To understand interrelationships among many food processing techniques and unit processes within a food industry e.g.
 - R & D (Product Development)
 - Marketing & Sales.
 - Regulatory Affairs
 - Finance & Costing
 - Production/ Operations
 - HR & Retailing
 - Procurement & Supply Chain Management
3. To gain experience of Industry's Quality standards & systems, Food Safety & Hygiene, Management & Quality focus areas etc.

OTJ requirements

Students are required to work in food processing / manufacturing factories as part of field placement to gain practical work experience, free of cost. This being an important and critical area of the training, students should take up this assignment seriously and in right earnest. Students shall submit Compliance Report from the competent authority of the factory to the Principal/ Course Co-coordinator. This report should include:

- Background information on the industry/ factory.
- Summary of unit's operations
- Systems followed in the unit
- Observations with regards to Food Technology.
- Suggestions and Areas of Improvement.



A checklist will be sent to the concerned Food Industry for appraising the students' performance. The evaluation shall be based upon attendance, punctuality, involvement, team work & participation in the job assigned by the industry.

In case of Compliance Report not submitted the student shall not be permitted to appear for the examination.

The onus of placement in an industry will rest upon the students. However, principal/course coordinator will issue the recommendatory to the concerned authorities and approach various industries for the same. Students who fail to undergo and complete on the job training will not be permitted to appear for the final examination.

Guidelines for on the job training:

- a) The aim of training is essentially to provoke practical insight and judgment in understanding the complex issues involved.
- b) The student is required to conceptualize applications of basic principles of food technology in accordance with the food regulations.

The student is also required to develop the capacity of refining the problem and decision making skill which will help him to discharge more effectively his/her role and duties



Project Work: On any one of the subjects (8) of PGDFST curriculum, under the guidance of a qualified teacher. A project report should be submitted for evaluation followed by Viva - Voce.

Guidelines for the Project Work:

- a) In the project assignment report the student should state the present situation of the subject chosen, highlight in detail its merits and demerits, suggest new system, also highlight in detail the merit of the new system suggested by him side by side justifying its implementation as detailed.
- b) Project report shall be assigned marks taking into consideration the foregoing objectives and parameters and the originality and research mind set and creative thinking of the student, as revealed in the report.
- c) The project shall be assessed for 200 marks. 100 marks for the report & 100 marks through the viva voce examination on the project report.
- d) The project report should be minimum 50 pages and not more than 80 pages.
- e) 100 marks for Project Report + 100 marks for Viva voce.
- f) Viva panel members should consist of Principal, Course Coordinators (1-2), and Industry experts (1-2)

List of major project topics.

- 1. Microbiological food standards in the industry
- 2. Chemical food standards in the industry
- 3. Product Evaluation methods used in the industry.
- 4. Methods of procurement of raw materials
- 5. Safety measures adopted in Food Industry
- 6. Quality control measures
- 7. Waste disposal (Solid)
- 8. Waste disposal (Liquid)



9. Packaging material used
10. Labeling methods
11. Shelf life study
12. Product standards and specifications.
13. Nutritional significance of Food Products.
14. Preservation techniques of Food Products.
15. Market Survey for Food Products.
16. Unit Operations & Processed followed in the Food Industry.
17. Sensory Evaluation
18. Role of Sweeteners in Processed Foods
19. Dietetic/ Health Foods trend in India.
20. New Product Development in given food application
21. Organic foods and their expansion in India.

Above list is suggestive only. A student may opt for any topic related to PGDFST course in consultation with the guide and/or industry expert.

Overall personality development training is advised for all students. Lectures/seminars may be arranged for Personality development 4 hours

Communication skills 4 hours

How to appear for interview? 2 hours



6e. Study or Field Visits

Study Visits will cover minimum of 1 month period.

Students shall visit Food Industries, Food Research Institutes, Food Laboratories, Dairy/Agricultural Education Institutes, Local Offices of Government Regulatory Bodes, etc. Study visits for the students shall be arranged based on the curriculum. Students should submit the factory visit report describing their observations and learnings. This report should be submitted to the Principal/ Course Coordinator within 1 week of the completion of the visit concerned faculty and for the final examination.



7. EXAMINATION SCHEME



SUBJECTS	Scheme of Examination			
	Theory Marks	Practical Marks	No. of Assignments	No. of Internal Tests
1. ADVANCED NUTRITION	100	50	2	3
2. ADVANCED FOOD MICROBIOLOGY	100	50	1	3
3. FOOD PRESERVATION & PACKAGING	100	50	1	3
4. FOOD SCIENCE	100	50	-	4
5. FOOD SAFETY AND PLANT SANITATION	100	-	1	2
6. ADVANCES IN FOOD TECHNOLOGY	100	75	2	3
7. INSTRUMENTATION & QUALITY CONTROL	100	75	1	3
8. FOOD LAWS AND REGULATION	100	-	2	2
9. ON THE JOB TRAINING	100	-	-	-
10. PROJECT REPORT	150	-	-	-
TOTAL	1050	350		
GRAND TOTAL	1400			



7a. Examination Scheme

Internal assessment will be for 50 marks and will be treated as a marker for eligibility to appear for the final exam. Each core subject will have an assignment & it is mandatory for the students to complete minimum total 6 assignments during the course to qualify for the annual exam.

7b. Question paper pattern (as per Saurashtra University)

Question paper pattern (Final examination):

Theory - Marks 100

- | | |
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| 1. Objective questions – MCQ, filling the blanks, match the following, True or False | 30 Marks |
| 2. Short answers – 5 out of 7 | 15 Marks |
| 3. Short notes – 5 out of 7 | 25 Marks |
| 4. Long essays – 2 out of 3 | 30 Marks |

Practical- Marks 50

10 marks for record, 40 for Practical

(Above-written question paper pattern is indicative only. The University reserves its right of formatting final examination and results thereof as deemed appropriate.)

7c. Minimum marks for passing

Students must secure minimum 50% marks in Theory, Practical, On the job training, Project report and Project viva in each and every exam component mentioned herein.

Students passing in Theory, but failing in Practical, will be exempted in Theory. Students failing in Theory, but passing in Practical, will be exempted in Practical. If students want to reassess or recheck the papers, it will be done as per University Rules

7d. Repeat exam

Maximum number of attempts permitted is 3. Students should complete the course within the maximum period of 3 years from his/her date of admission.

