



GURU NANAK COLLEGE (AUTONOMOUS)

Guru Nanak Salai, Velachery, Chennai - 42
Affiliated to the University of Madras
Re -Accredited @ 'A Grade' by NAAC
A Unit of Guru Nanak Educational Society®

Office : 2245 1746 / 2244 4621
Hostel : 2245 1273
Fax : (044) 2244 7373
Email : principal@gurunanakcollege.edu.in
Web : www.gurunanakcollege.edu.in

Sardar Rajinder Singh Bhasin
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M.G. Ragunathan M.Sc., M.Phil., Ph.D., PGDESD
Principal

Date: 31.12.2021

TO WHOMSOEVER IT MAY CONCERN

This is to certify that full time teachers of the college have generated revenue for conducting various corporate training and consultancy services to different stakeholders. The year wise details of the amount of revenue generated from consultancy and corporate training during last five years (INR in lakhs) are given below:

Academic Year	2020-21	2019-20	2018-19	2017-18	2016-17
Amount (INR in Lakhs)	0.45	1.37	0.11	0.21	3.68

For Nagarajan & Associates
Chartered Accountants
FRN : 016996S

V. Nagarajan
V. NAGARAJAN
Proprietor
M.No: 024450



Dr. M.G. Ragunathan
PRINCIPAL

PRINCIPAL
GURU NANAK COLLEGE (AUTONOMOUS)
GURU NANAK SALAI, VELACHERY
CHENNAI-600 042



Guru Nanak College (Autonomous)



(Affiliated to University of Madras & Re-Accredited At "A" Grade by NAAC)
No. 161, Guru Nanak Salai, Velachery, Chennai – 600042, Tamil Nadu
Website: www.gurunanakcollege.edu.in

3.5.1 Revenue generated from consultancy and corporate training during
the last five years (INR in Lakhs)

Supporting Documents

**Audited Statements and
Supporting Letters**


|| 2016-17 ||


	GURU NANAK COLLEGE (AUTONOMOUS) Affiliated to the University of Madras Accredited by NAAC at "A" Grade. ISO Certified (9001 - 2015) Guru Nanak Salai, Velachery, Chennai - 600 042.
CERTIFIED DOCUMENTS	
METRIC NO. : <u>3.5.1</u>	
PAGE NO. <u>1</u> TO <u>7</u>	
 PRINCIPAL	

GURU NANAK COLLEGE
(AN UNIT OF GURUNANAK EDUCATIONAL SOCIETY REGD.)
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31-03-2017

<u>INCOME</u>		<u>2016-2017</u>
Fees Collection		128986786
Consultance fees Received		367000
	TOTAL - A	129353786
<u>EXPENDITURE</u>		<u>2016-2017</u>
Employee Rem. & Benefits		58927063
Academic & Sports Expenses	7315560	
Other Maintenance Expense	3273243	
Communication Expenses	534728	
Book Purchase	2508219	
Recognition & University Fees	2836801	
Scholarship	1624064	
Expenditure Green Campus Initiative	268320	
Physical and Acadmic Maintenance Exp	8520735	
Expenditure Excluding Salary		26881670
TOTAL (SALARY & OTHER EXPENSES) - B		85808733
EXCESS OF INCOME OVER EXPENDITURE		A-B
		43545053

For and on Behalf of the Society
Guru Nanak Educational Society®

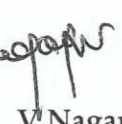

Manjit Singh Nayar
General Secretary


M.G. Raghunathan
Principal

Place: Chennai
Date:

For Nagarajan & Associates
Chartered Accountants
FRN:016996S




V. Nagarajan
M.No.024450
Proprietor

Date: 04.01.2017

From

Managing Partner,
Southern Motor Cycles,
Chennai - 600100.

To

The Principal,
Guru Nanak College (Autonomous),
Chennai - 600042.

Dear Sir,

We would like to have our employees trained in utilization of Software packages / applications in various aspects of business and preparation of reports as needed. We have employees from various departments like accounts, purchase, quality inspection and marketing.

Kindly share with us your training modules and commercials. We will look into it and let you know our consent.

Thank you

Yours Sincerely



Managing Partner
Southern Motor Cycles

Southern Motorcycles

Regd Office: 8/C, State Bank Street, Anna Salai, Chennai - 600 002. Tamilnadu.

Branch: "Guru Kripa" 150, Tambaram Velachery Main Road, Medavakkam, Chennai - 600 100, Tamil Nadu

Parts Centre : "Guru Nivas", No. 147, Karanaithangal Village, Vandalur-Walajah Main Road, Sriperumbudur TK.
Kanchipuram District - 602105.

Phone: 044-22772494-95, 044-28600143, Customer Care: 8754549310

chennai@southernmotorcycles.in, accounts@southernmotorcycles.in, www.southernmotorcycles.in



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(AUTONOMOUS)

Velachery, Chennai – 600 042

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Sardar Harbans Singh Anand
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M. Selvaraj M.Sc., Ph.D.,
Principal

Date: 09.01.2017

To

The Managing Director
Southern Motor Cycles
Chennai -600100

Respected Sir/Madam,

Sub: Modules for Training Program

With reference to your request for the training program, The Department of B.Sc Computer Science, Guru Nanak College offers to conduct the training modules. You may refer to the modules and can express your interest accordingly.

Module	Title	Methodology	No. of Participants	No. of Trainers	Venue
Module 1	Spreadsheet Elements. 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.	Presentation and Hands on training	20	2	Office of SMC
Module 2	Using Formulas. Working with Function and Charts. Advanced Filter, Comments, Protecting Worksheet.	Presentation and Hands on training	20	2	

The Commercial for the training shall be Rs.9,200 per person and the payment to be made in favour of 'The Principal, Guru Nanak College'.

Thank You
Yours Sincerely

PRINCIPAL

PRINCIPAL

GURU NANAK COLLEGE(AUTONOMOUS)

GURU NANAK SALAI,

VELACHERY, CHENNAI - 600 042



Registered Office : Guru Nanak Educational Society® Regn No: S.No. 178 of 1970

Administrative Block, Guru Nanak College Campus, New No.161, Old No.53, Velachery Main Road, Velachery, Chennai - 600042. Phone : 2255 2080 Email : gnesvelachery2015@gmail.com

Date: 17.01.2017

From

Managing Partner,
Southern Motor Cycles,
Chennai 600100.

To

The Principal,
Guru Nanak College (Autonomous),
Chennai 600042.

Dear Sir,

We have gone through the training modules and we are satisfied with both modules. We hereby agree to the commercial terms. We would like to send our employees to your premises for the training. We look forward to having many more fruitful associations in future.

Thank you

Yours Sincerely,



Managing Partner
Southern Motor Cycles

Southern Motorcycles

Regd Office: 8/C, State Bank Street, Anna Salai, Chennai - 600 002. Tamilnadu.

Branch: "Guru Kripa" 150, Tambaram Velachery Main Road, Medavakkam, Chennai - 600 100, Tamil Nadu

Parts Centre : "Guru Nivas", No.147, Karanaithangal Village, Vandalur-Walajah Main Road, Sriperumbudur TK.
Kanchipuram District - 602105.

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chennai@southernmotorcycles.in, accounts@southernmotorcycles.in, www.southernmotorcycles.in



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Guru Nanak Salai, Velachery, Chennai – 600042.

NAME OF THE EVENT	Hands on training on “Utilization of MS- Excel in Office Automation”
DATE OF THE EVENT	03/02/2017 & 04/02/2017
ORGANIZED BY	Master of Computer Applications
IN ASSOCIATION WITH	NIL
PLACE OF THE EVENT	Southern Motors, Chennai.
NO. OF PARTICIPANTS	40

REPORT

The Department of Master of Computer Applications (M.C.A) had given Hands-on training to Staff of Southern Motor Cycles Ltd. on “Utilization of MS- Excel in Office Automation”. The Training was given on 03/02/2017 & 04/02/2017 in the Meeting Hall at **Southern Motors**, Chennai. S.Nirmala Devi, Assistant Professor & Mr.V.K.Anand Assistant Professor belonging to MCA Department are the Resource Persons for the programme. The training modules were divided into two parts. The first module consisted of the Basics of Excel and its applications and the second module was on various working formulas in Excel. The Staff members who had actively participated in the training appreciated the Trainers and expressed their satisfaction. Totally 40 Employees participated in this training programme.

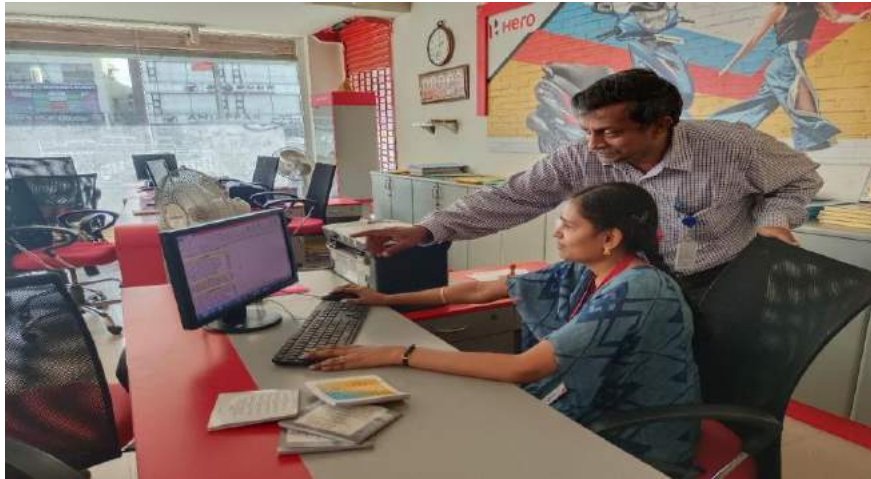
Photos



Organizing Committee along with Participants



Dr.Nirmaladevi is teaching Ms.Excel for Office automation to the Employees of Southern Motors.



Dr.Nirmaladevi and Mr.V.K.Anand are teaching “Ms.Excel for Office automation” to the Employees of Southern Motors, Chennai.



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3.5.1 Revenue generated from consultancy and corporate training during
the last five years (INR in Lakhs)

Supporting Documents

**Audited Statements and
Supporting Letters**

|| 2017-18 ||


	GURU NANAK COLLEGE (AUTONOMOUS) Affiliated to the University of Madras Accredited by NAAC at "A" Grade, ISO Certified (9001 - 2015) Guru Nanak Salai, Velachery, Chennai - 600 042.
CERTIFIED DOCUMENTS	
METRIC NO. : 3.5.1	
PAGE NO. 01 TO 16	
 PRINCIPAL	

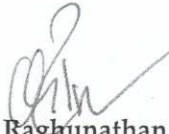
GURU NANAK COLLEGE
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INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31-03-2018

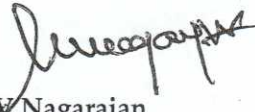
INCOME		2017-2018
Fees Collection		169077800
Consultance fees Received		21000
	TOTAL- A	169098800
EXPENDITURE		2017-2018
Employee Rem. & Benefits		68838792
Academic & Sports Expenses	8960008	
Other Maintenance Expense	3848969	
Communication Expenses	491276	
Book Purchase	2760286	
Recognition & University Fees	2909349	
Scholarship	1798522	
Expenditure Green Campus Initiative	280670	
Physical and Acadmic Maintenance Exp	11236740	
Expenditure Excluding Salary		32285820
TOTAL (SALARY & OTHER EXPENSES) - B		101124613
EXCESS OF INCOME OVER EXPENDITURE		A-B 67974188

For and on Behalf of the Society
Guru Nanak Educational Society®

For Nagarajan & Associates
Chartered Accountants
FRN:016996S


Manjit Singh Nayar
General Secretary


M.G. Raghunathan
Principal


V. Nagarajan
M.No.024450
Proprietor



Place: Chennai
Date:

From

Dr.S.Prasanna,
Assistant Professor
Prof.Dhanapalan College of arts & Science,
Padur, Chennai.

To B.Sc Computer


To

The Principal,
Guru Nanak College,
Chennai-42

Respected Sir/Madam,

Greetings. I need to undergo training on their respective subjects to get new exposure during every semester. I am in need of training on Python Programming in the department of Computer Application of your esteemed institution on 26 & 27 Sep 2017. Therefore, I request you to kindly grant them permission to be at your department during the training period. I am very grateful for your support in this regard.

Thank You

Place: Chennai

Date: 22.8.2017

Yours Sincerely





GURU NANAK COLLEGE

(AUTONOMOUS)

Velachery, Chennai – 600 042

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Sardar Harbans Singh Anand
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M. Selvaraj M.Sc., Ph.D.,
Principal

Date: 28.08.2017

To


Dr.S.Prasanna,
Assistant Professor,
Prof.Dhanapalan College of arts & Science,
Padur, Chennai.

Dear Madam,,

This is in reference with the earlier request letter dated 22.08.2017. I am glad to inform you that you have been selected for the Consultancy training on Python Programming offered by the Department of Computer Science and the charge for the training is Rs. 750/- for each Staff. I am enclosing the programme schedule for your perusal.

Thank You Sir,




PRINCIPAL
PRINCIPAL
GURU NANAK COLLEGE (AUTONOMOUS)
GURU NANAK COLLEGE
VELACHERY, CHENNAI - 600 042

From

Dr.S.Jagadeesan,
Assistant Professor,
D.B.Jain College,
Chennai.

To. B.Sc. Com. Sci



To

The Principal,
Guru Nanak College.
Chennai-42

Respected Sir/Madam,

Greetings. I need to undergo training on their respective subjects to get new exposure during every semester. I am in need of training on Python Programming in the department of Computer Application of your esteemed institution on 26 & 27 Sep 2017. Therefore, I request you to kindly grant them permission to be at your department during the training period. I am very grateful for your support in this regard.

Thank You

Place: Chennai

Date: 21.8.2017

Yours Sincerely





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Sardar Harbans Singh Anand
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M. Selvaraj M.Sc., Ph.D.,
Principal

Date: 28.08.2017

To

Dr.S.Jagadeesan,
Assistant Professor,
D.B.Jain College,
Chennai.

Dear Sir,

This is in reference with the earlier request letter dated 21.08.2017. I am glad to inform you that you have been selected for the Consultancy training on Python Programming offered by the Department of Computer Science and the charge for the training is Rs. 750/- for each Staff. I am enclosing the programme schedule for your perusal.

Thank You Sir,



PRINCIPAL
PRINCIPAL

GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI
VELACHERY, CHENNAI - 600 042

To BSc Com Sci



From

Dr.S.Balaji,
Assistant Professor
D.B.Jain College,
Chennai.

To

The Principal,
Guru Nanak College.
Chennai-42

Respected Sir/Madam,

Greetings. I need to undergo training on their respective subjects to get new exposure during every semester. I am in need of training on Python Programming in the department of Computer Application of your esteemed institution on 26 & 27 Sep 2017. Therefore, I request you to kindly grant them permission to be at your department during the training period. I am very grateful for your support in this regard.

Thank You

Place: Chennai

Date: 21.8.2017

Yours Sincerely





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Sardar Harbans Singh Anand
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M. Selvaraj M.Sc., Ph.D.,
Principal

Date: 28.08.2017

To

Dr.S.Balaji,
Assistant Professor
D.B.Jain College,
Chennai.

Dear Sir,

This is in reference with the earlier request letter dated 21.08.2017. I am glad to inform you that you have been selected for the Consultancy training on Python Programming offered by the Department of Computer Science and the charge for the training is Rs. 750/- for each Staff. I am enclosing the programme schedule for your perusal.

Thank You Sir,



PRINCIPAL

PRINCIPAL

GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

From

Mr. Vinoth Kumar,
Assistant Professor
St. Joseph's Arts and Science College,
Chennai.

To. B.Sc Comp-4.


To

The Principal,
Guru Nanak College.
Chennai-42

Respected Sir/Madam,

Greetings. I need to undergo training on their respective subjects to get new exposure during every semester. I am in need of training on Python Programming in the department of Computer Application of your esteemed institution on 26 & 27 Sep 2017. Therefore, I request you to kindly grant them permission to be at your department during the training period. I am very grateful for your support in this regard.

Thank You

Place: Chennai

Date: 23.8.2017

Yours Sincerely





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President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M. Selvaraj M.Sc., Ph.D.,
Principal

Date: 29.08.2017

To

Mr. Vinoth Kumar,
Assistant Professor
St. Joseph's Arts and Science College,
Chennai.

Dear Sir,

This is in reference with the earlier request letter dated 22.08.2017. I am glad to inform you that you have been selected for the Consultancy training on Python Programming offered by the Department of Computer Science and the charge for the training is Rs. 750/- for each Staff. I am enclosing the programme schedule for your perusal.


Thank You Sir,



PRINCIPAL
PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

From

Mr. Ravishankar,
Assistant Professor
T.S.N College,
Chennai.

To. B.Sc. Com-Sci


To

The Principal,
Guru Nanak College.
Chennai-42

Respected Sir/Madam,

Greetings. I need to undergo training on their respective subjects to get new exposure during every semester. I am in need of training on Python Programming in the department of Computer Application of your esteemed institution on 26 & 27 Sep 2017. Therefore, I request you to kindly grant them permission to be at your department during the training period. I am very grateful for your support in this regard.

Thank You

Place: Chennai

Date: 22.8.2017

Yours Sincerely





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(AUTONOMOUS)

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Sardar Harbans Singh Anand
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M. Selvaraj M.Sc., Ph.D.,
Principal

Date: 29.08.2017

To

Mr. Ravishankar,
Assistant Professor,
T.S.N College,
Chennai.

Dear Sir,

This is in reference with the earlier request letter dated 23.08.2017. I am glad to inform you that you have been selected for the Consultancy training on Python Programming offered by the Department of Computer Science and the charge for the training is Rs. 750/- for each Staff. I am enclosing the programme schedule for your perusal.


Thank You Sir,



PRINCIPAL
PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

From

S. Baskar
Assistant Professor
Department of Computer Application S-II,
Hindustan College of Arts & Science, Padur.

To . B.Sc. Com. Sci


To

The Principal,
Guru Nanak College,
Chennai-42

Respected Sir/Madam,

Greetings. I need to undergo training on their respective subjects to get new exposure during every semester. I am in need of training on Python Programming in the department of Computer Application of your esteemed institution on 26 & 27 Sep 2017. Therefore, I request you to kindly grant them permission to be at your department during the training period. I am very grateful for your support in this regard.

Thank You

Place: Chennai

Date: 25.8.2017

Yours Sincerely





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Sardar Harbans Singh Anand
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M. Selvaraj M.Sc., Ph.D.,
Principal

Date: 28.08.2017

From

The Principal,
Guru Nanak College,
Chennai-42.

To

S. Baskar
Assistant Professor
Department of Computer Application S-II,
Hindustan College of Arts & Science, Padur.

Dear Sir,

This is in reference with the earlier request letter dated 25.08.2017. I am glad to inform you that you have been selected for the Consultancy training on Python Programming offered by Department of Computer Science and the charge for the training is allotted Rs. 750/- for each staff.

Thank You



PRINCIPAL
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GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

**GURU NANAK COLLEGE(AUTONOMOUS)****DEPARTMENT OF COMPUTER SCIENCE****Two-Day Workshop on
PYTHON PROGRAMMING****26-09-2017 & 27-9-2017**

S.No	Name of the participant	College Name	Fees
1	Mr.S.Baskar	TSN College	750
2	Dr.S.Prasanna	Prof.Dhanapalan College Of Arts & Science	750
3	Dr.S.Jagadeesan	D.B.Jain College	750
4	Dr.S.Balaji	D.B.Jain College	750
5	Mr.Vinoth Kumar	St.Joseph's Arts and Science College	750
6	Dr.S.Bharathidason	Loyola College	750
7	Mrs.Arul Mary Deepa	Women's Christain College	750
8	Mrs.Jerlin	Women's Christain College	750
9	Mr.Elangovan	Agurchand Manmull Jain College	750
10	Dr.UmaSankari	Dr. MGR Janaki College of Arts and Science for Women	750
11	Mr.Arun	S.I.V.E.T COLLEGE	750
12	Mrs.AnandaPriya	Patrician College	750
13	Mrs.R.Ramya	Saradha Gangadharan College	750
14	Mrs.S.Preetha	D.B.Jain College	750
15	Mrs.Geetha	Sri Kanyaka Parameswari Arts and Science College for Women	750
16	Mrs.Bhuvaneswari	D.B.Jain College	750
17	Mrs.Durga	D.B.Jain College	750
18	Mr.JaiGanesh	Sri Sankara Arts and Science College	750
19	Mrs.Gokila	Mohammed Sathak College of Arts and Science	750
20	Mrs.VijayaBharathi	D.B.Jain College	750
21	Dr.Suresh	Tagore College of Arts and Science	750
22	Mr.Hakkim	The New College	750
23	Mrs.JayaPriya	Ethiraj College	750
24	Mrs.Sujatha	TSN College	750
25	Mr.Ravishankar	TSN College	750
26	Mrs.M.Santhanalakshmi	SDNB Vaishnav College for Women	750
27	Dr.GayathriDevi	SDNB Vaishnav College for Women	750
28	Mrs.C.Radha	D.B.Jain College	750
Total			21,000



PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

HEAD OF THE DEPARTMENT

Mrs. Rajini Surendranath MCA, MP
HEAD OF THE DEPARTMENT
B.Sc Computer Science
GURU NANAK COLLEGE
VELACHERY, CHENNAI - 600 042



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Guru Nanak Salai, Velachery, Chennai – 600042.

NAME OF THE EVENT	Workshop on Python Programming
DATE OF THE EVENT	26.09.2017 & 27.09.2017
ORGANIZED BY	Department of Computer Science
IN ASSOCIATION WITH	NIL
PLACE OF THE EVENT	Guru Nanak College
NO. OF PARTICIPANTS	120

REPORT

Resource person from Respro Labs gave an introduction about Machine Learning, Artificial Intelligence at AC Seminar Hall to the computer science staff members from other colleges on 26.09.2017 between 10.00 am to 11.00 am. Followed by hands-on training to the staff members in Lab – 3 in Python Programming on 26.09.2017 & 27.09.2017. The workshop had interactive sessions with staff members and the resources were also able to clear all the doubts raised by the staff. Finally, staff members gave fantastic feedback about the workshop which stated that the workshop was an eye opener for all in the field of Python Programming.

PHOTOS



Mr.Sabarinath, Respro Labs, Chennai during the inauguration of the Workshop on Python Programming.



Guru Nanak College (Autonomous)



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Website: www.gurunanakcollege.edu.in

3.5.1 Revenue generated from consultancy and corporate training during
the last five years (INR in Lakhs)

Supporting Documents

**Audited Statements and
Supporting Letters**

|| 2018-19 ||


	GURU NANAK COLLEGE (AUTONOMOUS) Affiliated to the University of Madras Accredited by NAAC at "A" Grade. ISO Certified (9001 - 2015) Guru Nanak Salai, Velachery, Chennai - 600 042.
CERTIFIED DOCUMENTS	
METRIC NO. : 3.5.1	
PAGE NO. 01 TO 07	
 PRINCIPAL	


GURU NANAK COLLEGE
(AN UNIT OF GURUNANAK EDUCATIONAL SOCIETY REGD.)
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31-03-2019

INCOME		2018-2019
Fees Collection		196710365
Consultance fees Received		11000
	TOTAL - A	196721365
EXPENDITURE		2018-2019
Employee Rem. & Benefits		82117926
Academic & Sports Expenses	8933196	
Other Maintenance Expense	4530711	
Communication Expenses	440746	
Book Purchase	2783914	
Recognition & University Fees	2654722	
Scholarship	14,66,922	
Expenditure Green Campus Initiative	293620	
Physical and Acadmic Maintenance Exp	20340530	
Expenditure Excluding Salary		41444360
TOTAL (SALARY & OTHER EXPENSES) - B		123562286
EXCESS OF INCOME OVER EXPENDITURE		A-B 73159079

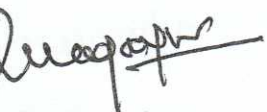
For and on Behalf of the Society
Guru Nanak Educational Society®

For Nagarajan & Associates
Chartered Accountants
FRN:016996S


Manjit Singh Nayar
General Secretary


M.G. Raghunathan
Principal




V. Nagarajan
M.No.024450
Proprietor

Place: Chennai
Date:

From

Dr. C. Deepa,

Assistant Professor and Head

Department of the Biotechnology

Kongu Arts and Science College (Autonomous)

Nanjanapuram, Erode

To

Dr. Bharathi Ravikrishnan

Assistant Professor and Head

Department of Biotechnology

Guru Nanak College

Velachery, Chennai

Dear Madam

Greetings. Our B.Sc students need to undergo summer training during their semester holidays as a part of their curriculum. Three of our students (list provided below) are interested in Molecular techniques and they would like to undergo their training in your institution for a period of two weeks in the month of May, 2019 (May 13 – May 31) in your laboratory. Therefore, I request you to kindly grant them permission to be at your department during the training period. We are very grateful for your support in this regard.

Thank You

Erode

26.04.2019

Sincerely

C. Deepa
26/4/19
(C. Deepa)

Assistant Professor and Head
Dept of Biotechnology
Kongu Arts & Science College
Erode - 638 107.

List of Students:

1. Ms.K.Gokila,
2. Ms.P.Karthika,
3. Ms.V.Jeevitha

he on line 26/4/19.
**PRINCIPAL,
KONGU ARTS AND SCIENCE COLLEGE
(AUTONOMOUS)
NANJANAPURAM, ERODE - 638 107.**

1. P. Karthika
2. K. Jyoti
3. V. Seetha

3

From

Dr. (Mrs.) Bharathi Ravikrishnan,
Assistant Professor and Head (i/c),
Department of Biotechnology,
Guru Nanak College.

To

The Principal,
Kongu Arts and Science College.

Respected Sir,

This is in reference with the earlier request letter dated 26.4.2019. I am glad to inform you that, the students Ms. K.Gokila, Ms. P.Karthika, Ms. V.Jeevitha, have been selected for the three weeks internship on Molecular techniques offered by Department of Biotechnology and the charge for Internship is Rs. 5000 for each student. I am enclosing the programme schedule for your perusal.

Thank you Sir.

Yours Sincerely


BHARATHI RAVIKRISHNAN
DEPARTMENT OF BIOTECHNOLOGY
GURU NANAK COLLEGE (AUTONOMOUS)
VELACHERY, CHENNAI - 600 042.

Place: Chennai

Date: 27.4.19.

SUMMER INTERNSHIP

On

Molecular Techniques

The internship began at 10.00 a.m., on the 13th of May 2019. Dr. Bharathi Ravi Krishnan spoke about the microbes, the molecular characterization of the microbes. She also highlighted the instruments employed in a laboratory for identification of microbes till a proper diagnosis. Following is the agenda of the Internship programme:

- Isolation, Biochemical characterization and Identification of Bacteria : 4 days
- Screening for industrial important bacteria (Amylase and Lipase) : 2 days
- Isolation of DNA (Genomic DNA and Plasmid DNA) : 2 days
- Bacterial Protein extraction and SDS-PAGE : 2 days
- Phytochemical screening (Detection of phytochemicals, TLC) : 5 days
- Antibacterial screening with the extracted phytochemicals

The students were taught about the importance of adhering to the good laboratory practices while handling microbial strains. They were also taught how to use the microscope for observation. The practical session began with students differentiating microbes by the basic classification of Gram's staining. The pathogenicity of the microbes was identified by screening the motility of the microbes using different techniques. The students were taught different methods of screening depending on the nutrient sources they utilize for their growth; based on which they were able to differentiate the pathogenic strains which is important in clinical diagnosis. They were also able to observe and isolate several aquatic crustaceans and planktons from the different sources of water collected for experimentation. A very important test to check the quality of the water was performed. The students were encouraged to bring water samples from places in and around their residence, lakes, ponds, sewage etc. They tested the water samples they brought and were able to distinguish the quality of the drinking water they consume. Molecular techniques like Bacterial and plant DNA, RNA and protein isolation were given hands-on training. The extraction of phytochemicals, characterization and antibacterial activities were also demonstrated. The 15 days internship programme ended on 31.5.2019.



H.O.D (I/c)

Guru Nanak College (Autonomous)
Guru Nanak Salai, Velachery, Chennai-600042.
Reaccredited at "A" by NAAC
Affiliated to University of Madras

Department of Biotechnology

SUMMER INTERNSHIP
On
Molecular Techniques


Budget

Cost for the 15 days Internship:

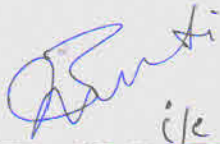
S.No.	Category	Charges
1.	Chemical cost	Rs.3000/-
2.	Overhead Charges (includes: Dist. Water, Electricity Tissues papers, Blotting Paper Usage of absorbent & Non-absorbent)	Rs. 925/-
3.	Certificate printing charges (Rs.25/-)	Rs.75
Total		Rs. 4000

Total amount received from the participants (3 Students) = Rs.15,000/-

Total revenue generated = Rs. 11,000/-


PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042




HEAD
DEPARTMENT OF BIOTECHNOLOGY
GURU NANAK COLLEGE (AUTONOMOUS)
VELACHERY, CHENNAI-600 042

PHOTOS



Dr. Bharathi Ravikrishnan demonstrating the Molecular techniques to the participants.



Guru Nanak College (Autonomous)



(Affiliated to University of Madras & Re-Accredited At "A" Grade by NAAC)
No. 161, Guru Nanak Salai, Velachery, Chennai – 600042, Tamil Nadu
Website: www.gurunanakcollege.edu.in

3.5.1 Revenue generated from consultancy and corporate training during
the last five years (INR in Lakhs)

Supporting Documents

**Audited Statements and
Supporting Letters**

|| 2019-20 ||


	GURU NANAK COLLEGE (AUTONOMOUS) Affiliated to the University of Madras Accredited by NAAC at "A" Grade. ISO Certified (9001 - 2015) Guru Nanak Salai, Velachery, Chennai - 600 042.
CERTIFIED DOCUMENTS	
METRIC NO. : 3.5.1	
PAGE NO. 01 TO 39	
 PRINCIPAL	


GURU NANAK COLLEGE
(AN UNIT OF GURUNANAK EDUCATIONAL SOCIETY REGD.)
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31-03-2020

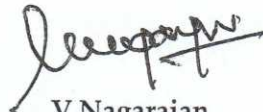
INCOME		2019-2020
Fees Collection		220957817
Consultance fees Received		83000
	TOTAL - A	221040817
EXPENDITURE		2019-2020
Employee Rem. & Benefits		83850443
Academic & Sports Expenses	14507480	
Other Maintenance Expense	8743468	
Communication Expenses	417222	
Book Purchase	2760286	
Recognition & University Fees	3943350	
Scholarship	20,45,294	
Expenditure Green Campus Initiative	308350	
Physical and Acadmic Maintenance Exp	14414970	
Expenditure Excluding Salary		92858472
TOTAL (SALARY & OTHER EXPENSES) - B		176708915
EXCESS OF INCOME OVER EXPENDITURE		A-B 44331902

For and on Behalf of the Society
Guru Nanak Educational Society®

For Nagarajan & Associates
Chartered Accountants
FRN:016996S


Manjit Singh Nayar
General Secretary


M.G. Raghunathan
Principal


V.Nagarajan
M.No.024450
Proprietor



Place: Chennai
Date:



GURU NANAK COLLEGE (AUTONOMOUS)

Guru Nanak Salai, Velachery, Chennai - 42
Affiliated to the University of Madras
Re -Accredited @ 'A Grade' by NAAC
A Unit of Guru Nanak Educational Society®

Office : 2245 1746 / 2244 4621
Hostel : 2245 1273
Fax : (044) 2244 7373
Email : principal@gurunanakcollege.edu.in
Web : www.gurunanakcollege.edu.in

Sardar Rajinder Singh Bhasin
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M.G. Ragunathan M.Sc., M.Phil., Ph.D., PGDES
Principal

To

Date: 10-11-2019

Ms. Ganga
Branch Manager
Equitas Bank
Velachery.

Dear Sir/Madam,

Warm greetings from Guru Nanak College, Chennai.

We are Guru Nanak College (Autonomous), a leading co-educational undergraduate, post graduate and research institution located at Velachery, Chennai established in 1971. It is affiliated to University of Madras and it functions in 2 shifts. It offers 23 UG Courses, 9 PG Courses, 2 M.phil programmes and 9 Ph.D programmes besides 3 ad-on courses and 19 certificate courses.


The department of B.Com Honours plan to conduct National Conference on topic Intellectual Property Rights on 15th feb 2020. The estimated budget for the above said programme amounts to Rs. 300000.

We would like to invite financial support from your esteemed organisation (as sponsors for the programme) which would be beneficial for both students and teaching community.

Expecting a favourable reply from you.

Thanking you




PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

From

Miss .Ganga
Bank Manager
Equitas Bank
Velachery.

3rd January 2020

B.Com Hons
CCE
3/1/20

To

The Principal
Guru Nanak College (Autonomous)
Velachery, Chennai.

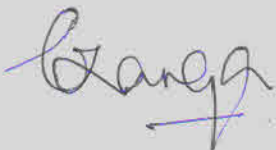
Respected Sir/Madam,

Greetings!

With reference to your sponsorship request letter, we are pleased to inform you that we, Equitas Bank sanction Rs.60,000 as sponsorship towards National Seminar on IPR to be organized by the Department of B.Com (Hons) on 15th February 2020. We are always ready to assist you in this regard.

Thank You

Yours Sincerely





GURU NANAK COLLEGE (AUTONOMOUS)

Guru Nanak Salai, Velachery, Chennai - 42
Affiliated to the University of Madras
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Sardar Rajinder Singh Bhasin
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M.G. Ragunathan M.Sc., M.Phil., Ph.D., PGDESD
Principal

To

Date: 10-11-2019

Mr. Krishna Swamy
GM-Finance
NLC.

Dear Sir/Madam,

Warm greetings from Guru Nanak College, Chennai.

We are Guru Nanak College (Autonomous), a leading co-educational undergraduate, post graduate and research institution located at Velachery, Chennai established in 1971. It is affiliated to University of Madras and it functions in 2 shifts. It offers 23 UG Courses, 9 PG Courses, 2 M.phil programmes and 9 Ph.D programmes besides 3 ad-on courses and 19 certificate courses.

The department of B.Com Honours plan to conduct National Conference on topic Intellectual Property Rights on 15th feb 2020. The estimated budget for the above said programme amounts to Rs. 3,00,000.

We would like to invite financial support from your esteemed organisation (as sponsors for the programme) which would be beneficial for both students and teaching community.

Expecting a favourable reply from you.

Thank you



Dr. M.G. Ragunathan
10/11/19

PRINCIPAL
GURU NANAK COLLEGE (AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042



एनएलसी इंडिया लिमिटेड - NLC India Limited
(Navratna- Government of India Enterprise)
CIN L93090TN1956GO1003507 Website : www.nlcindia.com



Public Relations Department

Block-2, Neyveli-607 801, Cuddalore District, Tamil Nadu
e-mail : pr.dept@nlcinda.com, pro.nlc57@gmail.com Tele Fax : 04142- 252257

Lr.No: 391/PRD/2020

Date: 04/02/2020

To

Dr D.Sowmya, M.Com., CMA, Ph.D., CS(I).,
Assistant Professor & Head,
Department of B.Com (Honours)
Guru Nanak College (Autonomous),
Velachery,
CHENNAI.

Madam,

Sub: Sponsorship for National Seminar on Intellectual Property
Rights (IPR) – Sponsorship - Reg.
Ref: Your Ref: Nil, Dated. 29-01-2020.

NLCIL is pleased to inform that it is sponsoring an amount of
Rs.50,000/- (Rupees Fifty Thousand only) (Exclusive of GST) for National
Seminar on Intellectual Property Rights (IPR) on 5th February 2020. The
enclosed Logo and address may be utilized for the seminar.

We shall arrange for the payment of Rs. **50,000/-** (Rupees Fifty Thousand
only) (exclusive of GST) through e-payment. The bills in triplicate, advanced
stamp receipt may be sent to us for our records. **It is also requested to
provide a copy of the PAN Card, First page of Bank Pass book, GST
Details and Name of the contact person and Cell phone Number for
making payment.**

Thanking you,

for NLC India Limited

(M. MADAVA RADJOU)
DY. GENERAL MANAGER (PR)

Payment / e-Payment Mandate Form

I / We hereby authorize M/s NLC India Limited, Neyveli – Accounts Centre/TA to settle our bills / dues in respect of the Contracts / Agreements mentioned below through Electronic / RTGS Mode.

1. Contract / Agreement No. : Lr.No: 391/PRD/2020
2. Contract Value : 50,000/-
3. Period of Work / Scheduled date of completion : NATIONAL SEMINAR ON INTELLECTUAL PROPERTY RIGHTS (IPR) SPONSORSHIP.

Bank Account Details:

4. Beneficiary Name : GURUNAK EDUCATIONAL SOCIETY
5. Name of the bank and Address of the Branch : CORPORATION BANK.
VELACHERY BRANCH, VELACHERY MAIN Road,
VELACHERY.
6. Bank Branch Code : 2109.
7. Bank Account No. : 520101009577080
- :
8. Bank IFSC Code (11 digit Code) : CORP 000 2109
AAATG0187E24.
9. A copy of PAN CARD enclosed :
10. Contact Person with Mobile No. : DR. Sowmya. 9789021590
11. GST Details : 33AAATG0187E1Z4.

I / We hereby agree for the bank charges, if any levied by the bank for the above facility.

Authorised Signatory with Designation
and Official Seal

Place : Chennai

Date : 14/02/2020 :

Verification by Bank

Dated ... 14/02/2020 .

I / We Corporation Bank (Name of the
Bank) having our branch at Velachery, Chennai - 42

..... (Branch Address) have verified the Bank
Accounts details at Sl. No. 4 to 8 with our Bank records and found to be
correct.



Bank's Common Seal

कृते कार्पोरेशन बैंक
For Corporation Bank
Branch Manager
(With Office
वरिष्ठ प्रबंधक / Senior Manager
वेल्चेरी शाखा / Velachery Br.
वेल्चेरी, चेन्नै / Velachery, Chennai - 42.

Note:

1. e-Payment facility is available for accounts maintained with State Bank of India (within India). This facility is presently available free of bank charges.
2. RTGS facility is available for accounts maintained with Banks other than State Bank of India with applicable bank charges.
3. Strike out whichever is not applicable.



GURU NANAK COLLEGE (AUTONOMOUS)

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Sardar Rajinder Singh Bhasin
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M.G. Ragunathan M.Sc., M.Phil., Ph.D., PGDESD
Principal

To

Date: 10-11-2019

The Manager
ITC

Dear Sir/Madam,

Sub: Request for sponsors for National Conference to be conducted by Department of B.Com Hons at Guru Nanak College, Chennai-Reg.

Warm greetings from Guru Nanak College, Chennai.

We are Guru Nanak College (Autonomous), a leading co-educational undergraduate, post graduate and research institution located at Velachery, Chennai established in 1971. It is affiliated to University of Madras and it functions in 2 shifts. It offers 23 UG Courses, 9 PG Courses, 2 M.phil programmes and 9 Ph.D programmes besides 3 ad-on courses and 19 certificate courses.

The department of B.Com Honours plan to conduct National Conference on topic Intellectual Property Rights on 15th feb 2020. The estimated budget for the above said programme amount to Rs. 3, 00,000.

We would like to invite financial support from your esteemed organisation (as sponsors for the programme) which would be beneficial for both students and teaching community.

Expecting a favourable reply from you.

Thank you.



Dr. M.G. Ragunathan

PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

From

6th January 2020

The Manager
ITC
Chennai.

B.Com Hons
OK 6/1/20

To

The Principal
Guru Nanak College (Autonomous)
Velachery, Chennai.

Respected Sir/Madam,
Greetings!

With reference to your sponsorship request letter, we are pleased to inform you that we, The Manager of ITC sanction Rs.12,500 (in kind) as sponsorship towards National Seminar on IPR to be organized by the Department of B.Com (Hons) on 15th February 2020.

Thank You

Yours Sincerely





GURU NANAK COLLEGE (AUTONOMOUS)

Guru Nanak Salai, Velachery, Chennai - 42
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Sardar Rajinder Singh Bhasin
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M.G. Ragunathan M.Sc., M.Phil., Ph.D., PGDESD
Principal

To

Date: 10-11-2019

M/S Adhithya Enterprises
Chennai

Dear Sir/Madam,

Warm greetings from Guru Nanak College, Chennai.

We are Guru Nanak College (Autonomous), a leading co-educational undergraduate, post graduate and research institution located at Velachery, Chennai established in 1971. It is affiliated to University of Madras and it functions in 2 shifts. It offers 23 UG Courses, 9 PG Courses, 2 M.phil programmes and 9 Ph.D programmes besides 3 ad-on courses and 19 certificate courses.

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We would like to invite financial support from your esteemed organisation (as sponsors for the programme) which would be beneficial for both students and teaching community.

Expecting a favourable reply from you.

Thank you.




PRINCIPAL
GURU NANAK COLLEGE (AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

From

3rd January 2020

M/s Adhithya Enterprise
Chennai.

To

The Principal
Guru Nanak College (Autonomous)
Velachery, Chennai.

B.Com Hons
Cal
31/1/20

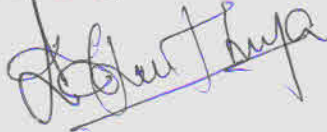
Respected Sir/Madam,

Greetings!

With reference to your sponsorship request letter, we are pleased to inform you that we, Adhithya Enterprise sanction Rs.5, 000 as sponsorship towards National Seminar on IPR to be organized by the Department of B.Com (Hons) on 15th February 2020.

Thank You

Yours Sincerely





GURU NANAK COLLEGE (AUTONOMOUS)

Guru Nanak Salai, Velachery, Chennai - 42
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Sardar Rajinder Singh Bhasin
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M.G. Ragunathan M.Sc., M.Phil., Ph.D., PGDESD
Principal

To

Date: 10-11-2019

Mr. Khaja
iPlanet
Chennai.

Dear Sir/Madam,

Warm greetings from Guru Nanak College, Chennai.

We are Guru Nanak College (Autonomous), a leading co-educational undergraduate, post graduate and research institution located at Velachery, Chennai established in 1971. It is affiliated to University of Madras and it functions in 2 shifts. It offers 23 UG Courses, 9 PG Courses, 2 M.phil programmes and 9 Ph.D programmes besides 3 ad-on courses and 19 certificate courses.

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Expecting a favourable reply from you.

Thanking you




PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

From

Mr. Khaja
iPlanet
Chennai.

22nd December 2019

B.Com Hons
CCE
22/12/19

To

The Principal
Guru Nanak College (Autonomous)
Velachery, Chennai

Respected Sir/Madam,

Greetings!

With reference to your sponsorship request letter, we are pleased to inform you that we, iPlanet, sanction Rs. 10,000 as sponsorship towards the National Seminar on IPR to be organized by the Department of B.Com (Hons) on 15th February 2020. It is our honour to participate in the process of Educating Students Community.

Thank You

Yours Sincerely



From

29/02/2020

Mr. Sanjai Gandhi

President, IPR Attorney Association,

Chennai

To

The Principal,

Guru Nanak College,

Chennai-42

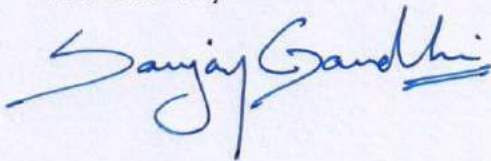
Respected Sir/Madam,

Greetings!

I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organising a National Seminar topic Intellectual Property Right. I wish to express my interest and willingness to attend the same on 05-02-2020.

Thank You

Yours Sincerely

A handwritten signature in blue ink that reads "Sanjay Gandhi". The signature is stylized with a long horizontal stroke at the beginning and a double underline at the end.

From

28/10/2020

Mr. CS.D. Mohan Sundaran

Associate Member with ICSI& ICMAI,

Certified PublicAccountant in Washington

Board of Accountancy.

Practicing CompanySecretary,

To

The Principal,

Guru Nanak College,

Chennai-42

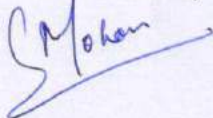
Respected Sir/Madam,

Greetings!

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Thank You

Yours Sincerely

A handwritten signature in blue ink, appearing to read 'S. Mohan', with a long horizontal flourish extending to the right.

From

23/01/2020

Mr. Joy Ghosh

Director, Board of Indian Council of Ceramics. tiles & Sanitary ware

(A CII & Ministry of Commerce, Govt. of India Body) & Director,

Board of Build 4 India – Joint venture co., with Koln Messe, Germany.

To

The Principal,

Guru Nanak College,

Chennai-42

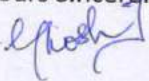
Respected Sir/Madam,

Greetings!

I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organising a National Seminar topic Intellectual Property Right. I wish to express my interest and willingness to attend the same on 05-02-2020.

Thank You

Yours Sincerely



From

22/01/2020

CS. Dr.Ahalada Rao

Fellow Member of ICSI & Central Council member ICSI,

Delhi Practicing Company Secretary,

Ahalada Rao & Associates, Hyderabad

To

The Principal,

Guru Nanak College,

Chennai-42

Respected Sir/Madam,

Greetings!

I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organising a National Seminar topic Intellectual Property Right. I wish to express my interest and willingness to attend the same on 05-02-2020.

Thank You

Yours Sincerely



From

30/01/2020

Mr. M. Mohammed Habibulla
Asst. Registrar of Trade Marks,
IPR, Chennai.

To

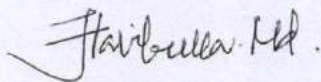
The Principal,
Guru Nanak College,
Chennai-42

Respected Sir/Madam,
Greetings!

I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organising a National Seminar topic Intellectual Property Right. I wish to express my interest and willingness to attend the same on 05-02-2020.

Thank You

Yours Sincerely



From

20/01/2020

Mr. K. Saravanan

Legal section Incharge

Trade Marks Registry,

IPR, Chennai.

To

The Principal,

Guru Nanak College,

Chennai-42

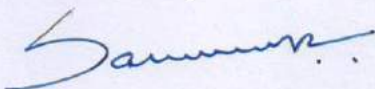
Respected Sir/Madam,

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Thank You

Yours Sincerely



From

29/02/2020

Mr.N.Shastry Tata

President, IPR Attorney Association,

Chennai

To

The Principal,

Guru Nanak College,

Chennai-42

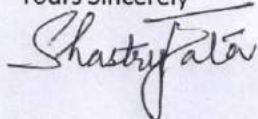
Respected Sir/Madam,

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Thank You

Yours Sincerely





GURU NANAK COLLEGE (AUTONOMOUS)

Affiliated to University of Madras and Re-Accredited at "A" Grade by NAAC
Guru Nanak Salai, Velachery, Chennai – 600042.

NAME OF THE EVENT	National Seminar on “INTELLECTUAL PROPERTY RIGHTS (IPR)”
DATE OF THE EVENT	05.02.2020
ORGANIZED BY	B. Com Honors
IN ASSOCIATION WITH	NIL
PLACE OF THE EVENT	Guru Nanak College
NO. OF PARTICIPANTS	133

REPORT

The department of B. Com Honours organized a 1-day National Seminar on the topic **“INTELLECTUAL PROPERTY RIGHTS (IPR)”** on **5th Feb 2020** in association with IQAC and the Guru Nanak Centre for Research, Naively Lignite Corporation(NLC), Equitas Small Finance Bank, i Planet, ITC Ltd.

The Objectives of the Seminar are

- To create awareness on IPR which plays a vital role in technological gains for attaining advanced development in a market driven economy.
- To impart greater knowledge about the issue of Intellectual Property Right (IPR), which has gained a special importance for all the domains of socio-economic development.
- To provide the insights about the need and importance of IPR which benefits students/ researchers/ inventors in respect of their copy rights / patenting their inventions.

The topic of the Seminar has attracted many academicians and experts in the industry who spoke and shared their knowledge in the vibrant Technical Sessions. 133 participants registered from various colleges and corporates pan India for the national seminar. Our participants include employees from Yes Bank, HCL, Ernest and Young

(EY), Various Law Firms, Students from Christ University, Bangalore, SRCC College, New Delhi, Shastra University, Kumbakonam & Tanjavur, Tamil Nadu Dr. Ambedkar Law University, SSS Jain, Auxillium College, Vels, School of Excellence in Law, Ethiraj college, SRM University, D.G.Vaishnava College, Anna Adharsh College, Dr. MGR Educational and Research institute, Mar Gregarious College, AM Jain College, Hindu college, Veltech University, Loyola college, Vivekananda college, Institute of Chartered Accountants of India, ICMAI, ICSI, Jaya college, Bharat University, PSB College, Crescent University, Dhanalakshmi College and Guru Nanak College to name a few. This National Seminar has brought together people from different parts of India namely from New Delhi, Pune, Tamil Nadu, Karnataka, Telangana and Andhra Pradesh and across India. The participants of this conference have gained a rare experience of listening to stalwarts from the legal and business fields. The delegates were exposed to a wide spectrum of very interesting issues relating to Importance and Legal Advantages of IPR and its various sub-segments. The program was inaugurated by Mr. Sanjai Gandhi, President, IPR Attorney Association, Chennai. He delivered his inaugural address. Mr. CS D. Mohana Sundaram, Associate Member with ICSI and ICMAI, CPA in Washington Board of Accounting and Practicing Company Secretary delivered the Technical Session – I on an “OVERVIEW OF IPR”. Mr. Joy Ghosh, Director, the Board of Indian Council of Ceramics, Tiles & Sanitaryware (a CII & Ministry of Commerce, Govt. of India Body) & Director, Board of Build 4 India – Joint Venture Co., with Koln Messe, Germany delivered the Technical Session – II on the topic of “Patent System”. CS Dr. Ahalada Rao, Fellow Member of ICSI & Central Council Member, ICSI, New Delhi, Practicing CS, Ahalada Rao and Associates, Hyderabad delivered the Technical Session - III on the topic “IPR Assets – Adds Value to Business” Mr. M. Mohammed Habibulla, Asst. Registrar of Trademarks, IPR, Chennai was the Resource Person for the Technical Session – IV on the topic “Trademarks and its Law”. Mr. K. Saravanan, Legal Session In-Charge Trademarks Registry, IPR, Chennai delivered the final Technical Session on the Topic “Copyrights and its application”. Mr. N. Shastry Tata, Managing Director, RSM Astute Consulting, Chennai was the Chief Guest of the Valedictory Session. He delivered the Valedictory Address. The journey in organizing the seminar has been stimulating because of the enthusiasm and support from our

General Secretary and Correspondent, our Principal, our Dynamic Vice - Principal and teaching fraternity and student volunteers of B. Com Hons of Guru Nanak College.

PHOTOS



Mr. Sanjai Gandhi, President, IPR Attorney Association, Chennai delivering inaugural address.



GURU NANAK COLLEGE (AUTONOMOUS)

Guru Nanak Salai, Velachery, Chennai - 42
Affiliated to the University of Madras
Re -Accredited @ 'A Grade' by NAAC
A Unit of Guru Nanak Educational Society®

Office : 2245 1746 / 2244 4621
Hostel : 2245 1273
Fax : (044) 2244 7373
Email : principal@gurunanakcollege.edu.in
Web : www.gurunanakcollege.edu.in

Sardar Rajinder Singh Bhasin
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M.G. Ragunathan M.Sc., M.Phil., Ph.D., PGDESD
Principal

To

Date: 11-12-2019

Dr. Sundari Suresh
GMRAF.

Dear Sir/Madam,

Warm greetings from Guru Nanak College, Chennai.

We are Guru Nanak College (Autonomous), a leading co-educational undergraduate, post graduate and research institution located at Velachery, Chennai established in 1971. It is affiliated to University of Madras and it functions in 2 shifts. It offers 23 UG Courses, 9 PG Courses, 2 M.phil programmes and 9 Ph.D programmes besides 3 ad-on courses and 19 certificate courses.

The department of B.Com Honours plan to conduct Two Day International Conference on topic Business Process Re-Engineering-A Global Perspective on 21st, 22nd Feb 2020. The estimated budget for the above said programme amount to Rs. 4,50,000.

We would like to invite financial support from your esteemed organisation (as sponsors for the programme) which would be beneficial for both students and teaching community.

Expecting a favourable reply from you.

Thanking you




PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

From

20th January 2020

Dr.Sundari Suresh
GMRAF.

B.Com Hons
20/1/20

To

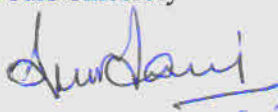
The Principal.
Guru Nanak College (Autonomous),
Velachery-42.

Respected Sir/Madam,
Greetings!

With reference to your sponsorship request letter, we are pleased to inform you that we, Dr.Sundari Suresh sanction Rs. 1,90,000 (in kind for Airfare of 4 Foreign resource persons) as sponsorship towards International Conference on Business Process Re-Engineering – A Global Perspective to be organized by the Department of B.Com (Hons) on 21st and 22nd February 2020.

Thank You

Yours Sincerely





GURU NANAK COLLEGE (AUTONOMOUS)

Guru Nanak Salai, Velachery, Chennai - 42
Affiliated to the University of Madras
Re -Accredited @ 'A Grade' by NAAC
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Office : 2245 1746 / 2244 4621
Hostel : 2245 1273
Fax : (044) 2244 7373
Email : principal@gurunanakcollege.edu.in
Web : www.gurunanakcollege.edu.in

Sardar Rajinder Singh Bhasin
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M.G. Ragunathan M.Sc., M.Phil., Ph.D., PGDESD
Principal

To

Date: 11-12-2019

The Manager
ITC
Chennai.

Dear Sir/Madam,

Warm greetings from Guru Nanak College, Chennai.

We are Guru Nanak College (Autonomous), a leading co-educational undergraduate, post graduate and research institution located at Velachery, Chennai established in 1971. It is affiliated to University of Madras and it functions in 2 shifts. It offers 23 UG Courses, 9 PG Courses, 2 M.phil programmes and 9 Ph.D programmes besides 3 ad-on courses and 19 certificate courses.

The department of B.Com Honours plan to conduct Two Day International Conference on topic Business Process Re-Engineering-A Global Perspective on 21st, 22nd Feb 2020. The estimated budget for the above said programme amount Rs. 4,50,000.

We would like to invite financial support from your esteemed organisation (as sponsors for the programme) which would be beneficial for both students and teaching community.

Expecting a favourable reply from you.

Thank you




PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

From

4th January 2020

The Manager
ITC.

To

The Principal.
Guru Nanak College (Autonomous),
Velachery-42.

To
B.Com Hons
CA

Respected Sir/Madam,
Greetings!

With reference to your sponsorship request letter, we are pleased to inform you that we, the manager of ITC sanction Rs. 12,500 (in kind) as sponsorship towards International Conference on Business Process Re-Engineering – A Global Perspective to be organized by the Department of B.Com (Hons) on 21st and 22nd February 2020. It is our honour to participate in the process of Education.

Thank You

Yours Sincerely



From

13/02/2020

Dr.Suresh Ramanathan

Dean and Principal – Great Lake Institute of Management,
Chennai

To

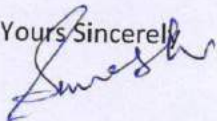
The Principal,
Guru Nanak College,
Chennai-42

Respected Sir/Madam,
Greetings!

I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organizing an International Conference topic Business Process Re- Engineering – A Global Perspective. I wish to express my interest and willingness to attend the same on 21/02/2020.

Thank You

Yours Sincerely,



From

17/02/2020

Mr. Jean Mutuku

President &CEO , Global Health Care Services

Kenya

To

The Principal,

Guru Nanak College,

Chennai-42

Respected Sir/Madam,

Greetings!

I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organising an International Conference topic Business Process Re- Engineering – A Global Perspective. I wish to express my interest and willingness to attend the same on 21/02/2020.

Thank You

Yours Sincerely



From

18/02/2020

Mr. Akira Hatayama (CG)

Japanese Faculty,

ABK -AOTS

Dosookai

To

The Principal,

Guru Nanak College,

Chennai-42

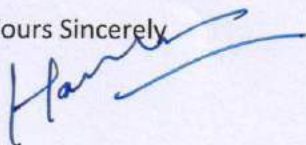
Respected Sir/Madam,

Greetings!

I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organising an International Conference topic Business Process Re- Engineering – A Global Perspective. I wish to express my interest and willingness to attend the same on 21/02/2020.

Thank You

Yours Sincerely

A handwritten signature in blue ink, appearing to read 'Hatayama', with a long horizontal flourish extending to the right.

From

15/02/2020

Mr. Albert Gafarov

Officer Scientific Technical and Economical Programs,
Russian Centre of Science and Culture.

To

The Principal,
Guru Nanak College,
Chennai-42

Respected Sir/Madam,
Greetings!

I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organising an International Conference topic Business Process Re- Engineering – A Global Perspective. I wish to express my interest and willingness to attend the same on 21/02/2020.

Thank You

Yours Sincerely



From

19/02/2020

Dr. M.B.M. Ismail

Professor,

Department of Marketing Management,

South Eastern University of Sri Lanka.

To

The Principal,

Guru Nanak College,

Chennai-42

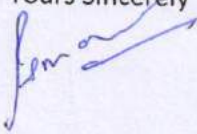
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I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organising an International Conference topic Business Process Re- Engineering – A Global Perspective. I wish to express my interest and willingness to attend the same on 22/02/2020.

Thank You

Yours Sincerely



From

11/02/2020

Dr. J. Vijaydorai
Professor & Director ,
Directorate of Distance Education,
Madurai Kamarajar University,
Madurai

To

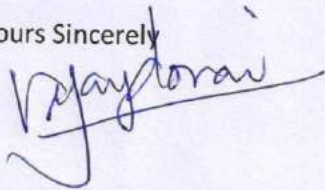
The Principal,
Guru Nanak College,
Chennai-42

Respected Sir/Madam,
Greetings!

I am pleased to know that the Department of Commerce – Honours is of Guru Nanak College is organising an International Conference topic Business Process Re- Engineering – A Global Perspective. I wish to express my interest and willingness to attend the same on 22/02/2020.

Thank You

Yours Sincerely



From

20/02/2020

Dr. Michael J. Barnes
Dean of Management
SRM Institute of Science and Management,
Chennai

To

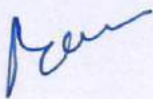
The Principal,
Guru Nanak College,
Chennai-42

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Thank You

Yours Sincerely



From

08/02/2020

Dr. Ravi Thodla

Finance Professor in School of Management,
SRM University, IST

To

The Principal,
Guru Nanak College,
Chennai-42

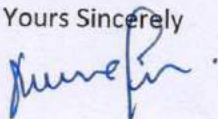
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Thank You

Yours Sincerely



From

07/02/2020

Mr. Sathyamoorthy

Senior Manager – Latent View Analytics,

Chennai

To

The Principal,

Guru Nanak College,

Chennai-42

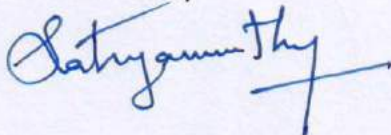
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Thank You

Yours Sincerely

A handwritten signature in blue ink, appearing to read 'Sathyamoorthy', with a long horizontal stroke extending to the right.

From

10/02/2020

S. Ramakrishna Velamuri

Chengwei,

Ventures Chair Professor of Entrepreneurship

China Europe International Business School,

China

To

The Principal,

Guru Nanak College,

Chennai-42

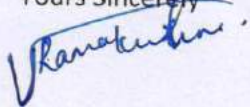
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Thank You

Yours Sincerely





GURU NANAK COLLEGE (AUTONOMOUS)

Affiliated to University of Madras and Re-Accredited at "A" Grade by NAAC
Guru Nanak Salai, Velachery, Chennai – 600042.

NAME OF THE EVENT	International conference on Business Process Re-engineering - A Global Perspective
DATE OF THE EVENT	21.02.2020 & 21.02.2020
ORGANIZED BY	Department of Commerce(Hons) & Business Administration
IN ASSOCIATION WITH	NIL
PLACE OF THE EVENT	Guru Nanak College
NO. OF PARTICIPANTS	123

REPORT

The department of Commerce (Honours) and Business administration jointly organized an International conference on Business Process Re-engineering - A Global Perspective on 21.02.2020 & 21.02.2020. Dr.M.G.Ragunathan, Principal of our College welcomed the gathering. Mr.Manjit Singh Nayar, General Secretary and Correspondent presided over the conference. Dr.M.B.M.Ismail, Professor, Department of Marketing, South Eastern University of Srilanka was the Chief Guest for the conference. Totally 123 participants from various Colleges and Universities were present during this Conference. 65 papers were presented by the Faculty Members, Research Scholars and Students. This conference inculcated the Business Process Re-engineering in the Global Scenario.

PHOTOS



Chief Guest, Dr.M.B.M.Ismail, Professor, Department of Marketing, South Eastern University of Srilanka during the International Conference.



Mr.Manjit Singh Nayar, General Secretary and Correspondent is honoring Dr.M.B.M.Ismail, Professor, Department of Marketing, South Eastern University of Srilanka during the International Conference.



Guru Nanak College (Autonomous)



(Affiliated to University of Madras & Re-Accredited At "A" Grade by NAAC)
No. 161, Guru Nanak Salai, Velachery, Chennai – 600042, Tamil Nadu
Website: www.gurunanakcollege.edu.in

3.5.1 Revenue generated from consultancy and corporate training during
the last five years (INR in Lakhs)

Supporting Documents

**Audited Statements and
Supporting Letters**


|| 2020-21 ||

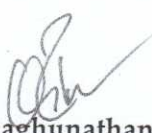
	GURU NANAK COLLEGE (AUTONOMOUS) Affiliated to the University of Madras Accredited by NAAC at "A" Grade. ISO Certified (9001 - 2015) Guru Nanak Salai, Velachery, Chennai - 600 042.
CERTIFIED DOCUMENTS	
METRIC NO. : <u>3.5.1</u>	
PAGE NO. <u>01</u> TO <u>30</u>	
 PRINCIPAL	

GURU NANAK COLLEGE
(AN UNIT OF GURUNANAK EDUCATIONAL SOCIETY REGD.)
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31-03-2021

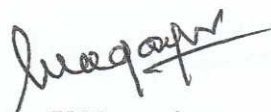
<u>INCOME</u>		<u>2020-2021</u>
Fees Collection		247169446
Consultancy fees Received		17000
	TOTAL-A	247186446
<u>EXPENDITURE</u>		<u>2020-2021</u>
Employee Rem. & Benefits		79162518
Academic & Sports Expenses	4498886	
Other Maintenance Expense	3268248	
Communication Expenses	464882	
Book Purchase	2508219	
Recognition & University Fees	5132507	
Scholarship	1346569	
Expenditure Green Campus Initiative	324070	
Physical and Acadmic Maintenance Exp	14046340	
Expenditure Excluding Salary		31589720
TOTAL (SALARY & OTHER EXPENSES) - B		110752238
EXCESS OF INCOME OVER EXPENDITURE		A-B 136434208

For and on Behalf of the Society
Guru Nanak Educational Society®


Manjit Singh Nayar
General Secretary


M.G. Raghunathan
Principal

For Nagarajan & Associates
Chartered Accountants
FRN:016996S


V. Nagarajan
M.No.024450
Proprietor



Place: Chennai
Date:



UNIVERSITY OF MADRAS

INSTITUTE OF DISTANCE EDUCATION

[Established under the Act of Incorporation XXVII of 1857 - Madras University Act 1923](State University)

IDE BUILDINGS, CHEPAUK, CHENNAI - 600 005

Phone: 25613999 / 25613716 Fax: 044 - 25360865

E-mail: ide123@vsnl.net / directoride@unom.ac.in

Prof. Dr. K.Ravichandran, M.Sc., Ph.D.
DIRECTOR.

Ref.No.IDE/LWS/MA.Eco.Tamil Medium /2020/ 1840

Date: 08 SEP 2020

To
✓ Dr.A.Jagan Gopi
Assistant Professor
Guru Nanak College,
Chennai-600 036.

Dear Sir/Madam,

Sub: IDE - Lesson Writing - Preparation of lesson(s) III & IV Sem. Tamil Medium - No. of units to be Written - Reg.

I wish to inform you that you have been assigned the following subject/s to prepare the lesson materials in the format of Self Learning Material [SLM].

Sl. No.	M.A. Economics-II Year III & IV Semester - Tamil Medium	Total No. of lesson(s)	No. of lessons allotted
1.	M.A Economics (Tamil Medium) III Semester: Core Paper- XI:- International Economics - I	16	16
2.	M.A Economics (Tamil Medium) IV Semester: Core Paper- XV:- International Economics - II	16	16

You are requested to accept the assignment and complete the study materials on **or before 07-10-2020**. Your kind co-operation in this matter is highly appreciated.

DIRECTOR

Encl: Syllabus.

Copy to: Professor Dr.K.Jothi Sivagnanam,
Professor & Head, Department of Economics,
University of Madras.

எம்.ஏ. பொருளாதாரம்

இரண்டாமாண்டு
நான்காம் பருவம்

தாள் - 15

பன்னாட்டு பொருளியல் - II



தொலைதூரக் கல்வி நிறுவனம்
சென்னைப் பல்கலைக்கழகம்

ஆக்கியவர்

முனைவர். அ. ஜெகன் கோபு

உதவிப் பேராசிரியர்

பொருளாதாரத் துறை

குருநானக் கல்லூரி

வேளச்சேரி, சென்னை - 600 042.

செப்பனிட்டவர்

முனைவர் S. சின்னம்மை

பேராசிரியர் & தலைவர்

பொருளியல் துறை

சென்னைப் பல்கலைக் கழகம்

சென்னை - 600 005.



GURU NANAK COLLEGE (AUTONOMOUS)

Guru Nanak Salai, Velachery, Chennai - 42
Affiliated to the University of Madras
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A Unit of Guru Nanak Educational Society®

Office : 2245 1746 / 2244 4621
Hostel : 2245 1273
Fax : (044) 2244 7373
Email : principal@gurunanakcollege.edu.in
Web : www.gurunanakcollege.edu.in

Sardar Rajinder Singh Bhasin
President

Sardar Manjit Singh Nayar
General Secretary & Correspondent

Dr. M.G. Ragunathan M.Sc., M.Phil., Ph.D., PGDESD
Principal

Translation of Books and Chapters

Translated by: Dr. L.R.S. KALANITHI, Vice Principal (Students' Affairs)

Content:

SPEC 208T

P.G.DEGREE PROGRAMME

M.A.ECONOMICS

II Year

IV Semester

Paper: 15


Name of the Book: International Economics-II

Course Offered by: Institute of Distance Education, University of Madras,
Chepauk, Chennai-600005, Tamilnadu, India

Author's Name: Dr.A. Jegangopu, Assistant Professor, Department of Economics,
Guru Nanak College, Chennai-600042.

Editor's Name: Dr. S.Chinnamai, Professor and Head, Department of Economics,
University of Madras, Chennai-600005.




PRINCIPAL
PRINCIPAL
GURU NANAK COLLEGE(AUTONOMOUS)
GURU NANAK SALAI,
VELACHERY, CHENNAI - 600 042

NC PAYEE ONLY



भारतीय स्टेट बैंक
State Bank Of India

MADRAS UNIVERSITY BRANCH (02234)
UNIVERSITY BLDGS. CHEPAUK,
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01.02.2021

From

Dr.B.Palani,
Department of Zoology
Govt.Thirumagal Mills College,
Gudiyattam,
Vellore-632 602

To

The Principal
Guru Nanak College (Autonomous)
Chennai 600042

Dear Sir,

Greetings! I am given to understand that the PG Zoology Department of Guru Nanak College is organizing a Consultancy training on "Aquaculture Disease Diagnosis" to be held during February 2021. I request you to grant me permission to undergo the training. Kindly share with us your training modules and commercials. I shall be grateful for your support in this regard.

Thank you

yours Sincerely



01.02.2021

From

Mr. D. UTHIRAKUMAR

Ph.d Scholar,

Department of Zoology,

Annamalai University,

Annamalai Nagar,

Chidambaram – 608 002

To

The Principal

Guru Nanak College (Autonomous)

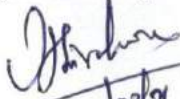
Chennai 600042

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Thank you

yours Sincerely


01/02/21

05.02.2021

From

Dr.J. JAYANTHI
Head & Convener
PG Department of Advanced Zoology & Biotechnology
Guru Nanak College (Autonomous),
Guru Nanak Salai,
Velachery, Chennai,
Tamil Nadu - 600 042.

To

Dr.B.Palani,
Department of Zoology
Govt.Thirumagal Mills College,
Gudiyattam,
Vellore-632 602

Dear Sir,

Sub: Acceptance to provide the Consultancy Training on "Aquaculture Disease Diagnosis" – Reg.

We are glad to accept your request to attend a workshop on "Aquaculture Disease Diagnosis" on 25.02.2021 & 26.02.2021 by paying a fee of Rs.500. Kindly find the modules of the workshop:

Module	Date	Title	Resource Person
Module 1	25.02.2021	Aquaculture Disease Diagnosis	Mr.G.Sathiyaraj, Assistant Technical
Module 2	26.02.2021	Histopathology in Shrimp Disease Diagnosis	Manager, Rajiv Gandhi Centre for Aquaculture (RGCA)

Thank you for showing interest in our Workshop.

Thanking you,

Yours truly,

(J. JAYANTHI)



Dr. J. JAYANTHI, M.Sc., M.Phil, Ph.D., PGDES,
FIAAB., FZSI, FSLSC., FSAB., FIAES., FICCB., FMSET, MIASN
Associate Professor & Head
Department of Advanced Zoology & Biotechnology
Guru Nanak College (Autonomous)
Velachery, Chennai - 600 042.

05.02.2021

From

Dr.J. JAYANTHI

Head & Convener

PG Department of Advanced Zoology & Biotechnology

Guru Nanak College (Autonomous),

Guru Nanak Salai,

Velachery, Chennai,

Tamil Nadu - 600 042.

To

Mr. D. UthiraKumar

Department of Zoology,

Annamalai University,

Annamalai Nagar,

Chidambaram – 608 002

Dear Sir,

Sub: Acceptance to provide the Consultancy Training on “Aquaculture Disease Diagnosis” – Reg.

We are glad to accept your request to attend a workshop on “Aquaculture Disease Diagnosis” on 25.02.2021 & 26.02.2021 by paying a fee of Rs.500. Kindly find the modules of the workshop:

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Thank you for showing interest in our Workshop.

Thanking you,

Yours truly,

(J. JAYANTHI)



Dr. J. JAYANTHI, M.Sc., M.Phil., Ph.D., PGDSED,
FIAAB., FZSI, FSLSC., FSAB., FIAES., FICCB., FMSET, MIASN
Associate Professor & Head
Department of Advanced Zoology & Biotechnology
Guru Nanak College (Autonomous)
Velachery, Chennai - 600 042



GURU NANAK COLLEGE (AUTONOMOUS)

Affiliated to University of Madras and Re-Accredited at "A" Grade by NAAC

Guru Nanak College, Vengal Rao, Chennai - 600 042.

Department of Advanced Zoology and Biotechnology

Event Title	National Workshop on “AQUACULTURE DISEASE DIAGNOSIS”	
Category	PG Students, Research Scholar and Faculty members	
Date	From: 25.02.2021	To: 26.02.2021
No. of Resource Person	4	
No. of Participants	30	

(1) Report Description

The Head of P.G and Research Department of advanced Zoology and Biotechnology, **Dr. J. Jayanthi** organized a National Workshop on “AQUACULTURE DISEASE DIAGNOSIS” at – Zoology Department, GNC from 25.02.2021 to 26.02.2021.

2) Report

Day 1- 25.02.2021

Mr. G. Sathiyaraj, Assistant Technical Manager, Rajiv Gandhi Centre for Aquaculture (RGCA), delivered the lecture on “Aquaculture Disease Diagnosis” followed by the hands on session on “Fixation and Processing Methods for Laboratory Analysis of Shrimp” and Anatomy of Penaeid shrimp. Dr. J. Jayanthi, Associate Professor and Head of the Department, Advanced and Biotechnology, Guru Nanak College (Autonomous) added a note on the “Fixation Methods for Laboratory Analysis of fish”. Dr. J. Sivakumar, Assistant Professor, Department of Advanced and Biotechnology delivered the lecture on “Anatomy of Fish” and “Basic Microbiological Techniques in Aquaculture” followed by the dissection of Ornamental fish. Dr. S. Venu, Assistant Professor, Department of Advanced and Biotechnology explained the “Various Methods of Sample Collection” followed by the hands on session on “Wet Mount Analysis and Laboratory Analysis of Aquatic Animals”.

Day 2 - 26.02.2021

Mr. G. Sathiyaraj, Assistant Technical Manager, Rajiv Gandhi Centre for Aquaculture (RGCA), delivered the lecture on “Histopathology in Shrimp Disease Diagnosis” and “Hematology of shrimp & Fish” followed by the hands on session on “Tissue Processing Methods for Laboratory Analysis of Shrimp”. Dr. J. Jayanthi, Associate Professor and Head of the Department, Advanced and Biotechnology, Guru Nanak College (Autonomous) demonstrated the “Tissue Processing Methods for Laboratory Analysis of Fish”. Dr. J. Sivakumar, Assistant Professor, Department of Advanced and Biotechnology performed the hands on session on “Staining and Mounting”. Dr. S. Venu, Assistant Professor, Department of Advanced and Biotechnology explained the “Microscopy on Shrimp & Fish Diseases” followed by the hands on session on “Mounting of Live Parasites from the Aquatic Animals”.

(2) Invitation Copy –


GURU NANAK COLLEGE (AUTONOMOUS)
Re-Accredited at 'A' Grade by NAAC
(Affiliated to the University of Madras)
Guru Nanak Salai, Velachery,
Chennai – 42

GURU NANAK CENTRE FOR RESEARCH

In Association with
PG & Research Department of Advanced Zoology and Biotechnology
&
Central Aquaculture Pathology Laboratory (CAPL),
(NABL Accredited as per ISO/IEC 17025:2005)
Rajiv Gandhi Centre for Aquaculture (RGCA),
(MPEDA, Ministry of Commerce & Industry, Government of India)
Sirkali, Nagapattinam - 609109
Tamil Nadu, India


Organizes
TWO DAY WORKSHOP
ON
AQUACULTURE DISEASE DIAGNOSIS
25th & 26th February, 2021

About GNC

Guru Nanak College was founded in 1971, which is liberally carved out of the Raj Bhavan grounds. *Pro Bono Publico* is the motto of the college which means "For the benefit of all". The 25 acres lush green campus provides an ideal setting for the intellectual pursuits of students and academicians. With nearly five decades of existence, the College has recorded exponential growth. It is a full-fledged Co-educational, Post Graduate and Research Institution affiliated to the University of Madras with 23 UG courses, 9 PG courses, 2 MPhil., Programmes and 9 Ph. D., Programmes. As of now, the student strength is 6475. The College is re-accredited at 'A' Grade in the third cycle by NAAC in 2018. The College has on its staff a team of dedicated and committed members who strive to instill in the students, the qualities of leadership and service mindedness. The College offers opportunities for the holistic development of the body and mind of young people.

About GNCR

The "Guru Nanak Centre for Research" (GNCR) was initiated in the year 2019 to commemorate the 550th birth anniversary of Shri Guru Nanak Devji. It was started in a view to bring together academicians, researchers and research scholars in the fields of Commerce, Economics, Management Studies, Social Sciences, Botany, Biotechnology, Biochemistry and Microbiology by providing a platform for ground breaking research. GNCR aims at paving the way in the pursuit of basic, applied and advanced research as well as fostering extension activities in various fields. G. S. Gill Research Institute a wing of GNCR named after the Lt. Col. G. S. Gill, Founder of Guru Nanak College is an Autonomous Research Institute involving in exclusive research on insect-plant interaction. GNCR provides an opportunity to explore new avenues and approaches in increasing the visibility of research.

About Aquaculture Disease Diagnosis Workshop

Aquaculture is rapidly growing part of agriculture worldwide. It makes up around 44 percent of total fish production globally. This increased growth of production is achieved despite facing

many challenges in the aquaculture environment. Among production limiting challenges, the infectious disease takes the lion share by causing multibillion-dollar loss annually. To reduce the impact of the fish disease, it is necessary to address health constraints based on scientifically proven and recommended ways. This workshop will be useful for researchers and post graduate students in different disciplines such as Zoology, Aquaculture, Fishery Biology and Life Science professionals. This workshop is designed to introduce the principles of Aquaculture Disease Diagnosis to researchers who are in need of pathological and toxicological analysis. This workshop is also aimed to train basic concepts of histology, demonstrate some of the basic and advanced diagnostic methods used in fishery sciences to improve the participant's ability to understand the histological techniques.

OBJECTIVES OF THE WORKSHOP

1. To provide the participants with the skills to collect the various tissues from Fish and Shrimp.
2. To demonstrate the methods involved in Aquaculture Disease Diagnosis
3. To train the participants in histological techniques, such as Fixation, Processing Methods, Sectioning, Staining and Microscopical observation.

REGISTRATION FEE: Rs.500/- On Spot Registration only. Candidates who wish to attend must send filled in registration form and confirm their participation. Only candidates who confirm their participation will be allowed to register on spot and participate in the workshop. (Registration fee include Workshop Material and Lunch). Last date for Registration is 23rd February 2021.

<https://forms.gle/MsNpJPpNAwiv3yH4>

ORGANIZING COMMITTEE MEMBERS

PATRON – Dr. M. G. Ragnathan, Principal
CONVENER – Dr. J. Jayanthi, Dean – Research

ORGANIZING SECRETARIES

Dr. J. Sivakumar, Assistant Professor
Dr. S. Venu, Assistant Professor

ADDRESS FOR CORRESPONDENCE

Dr. J. Jayanthi, Dean – Research, Guru Nanak Centre for Research, Guru Nanak College (Autonomous), Velachery, Chennai- 42. Mobile:-919003053668.
E-mail: researchdean@gurunanakcollege.edu.in

(3) PHOTOS



Dr.J.Jayanthi, Dean Research is welcoming the gathering.



Inauguration of the National Workshop



Mr. G. Sathiyaraj, Assistant Technical Manager, Rajiv Gandhi Centre for Aquaculture (RGCA), delivering lecture on “Aquaculture Disease Diagnosis.



Mr. G. Sathiyaraj, Assistant Technical Manager, Rajiv Gandhi Centre for Aquaculture (RGCA) is giving practical inputs to the Students.



Dr. J. Jayanthi, Associate Professor and Head of the Department, Advanced and Biotechnology, Guru Nanak College (Autonomous) demonstrating the “Tissue Processing Methods for Laboratory Analysis of Fish”.



Distribution of Certificates by Dr.J.Jayanthi, Dean Research and Convener of the Seminar.

(4) CERTIFICATE COPY





GURU NANAK COLLEGE (AUTONOMOUS)
VELACHERY, CHENNAI – 600 042
GURUNANAK CENTRE FOR RESEARCH &
PG & RESEARCH DEPARTMENT OF ADVANCED ZOOLOGY
AND BIOTECHNOLOGY

In Association With

Rajiv Gandhi Centre for Aquaculture (RGCA), (MPEDA, Ministry of Commerce & Industry, Government of India)

Sirkali, Nagapattinam – 609109, Tamil Nadu, India

TWO DAY NATIONAL WORKSHOP ON “AQUACULTURE DISEASE DIAGNOSIS”

25th & 26th February 2021

Registered Candidates other than GNC

S.NO	NAME	DESIGNATION	INSTITUTION	E. MAIL ID	MOBILE	AMOUNT
1.	Dr. T. KUMARAN	Head, Department of Zoology	Dr. Ambedkar Govt. Arts College, Vyasarpadi, Chennai – 600 039	kumaran.t1607@gmail.com	9884973535	500/-
2.	Mr. M. SANKAR	Ph.D Research Scholar	Dr. Ambedkar Govt. Arts College, Vyasarpadi, Chennai – 600 039	sankarjmp@gmail.com	9043145928	500/-
3.	Dr. R. SARAVANAN	Assistant Professor, Department of Zoology	Dr. Ambedkar Govt. Arts College, Vyasarpadi, Chennai – 600 039	rsaravanan0268@gmail.com	9952077967	500/-
4.	Mr. M. SUHAIL AHMED	Ph.D Research Scholar	The New College (Autonomous), Chennai – 600 014	suhailsch13@gmail.com	9600981987	500/-
5.	Mr. B. SANTHANABHARATHI	Ph.D Research Scholar	The New College (Autonomous), Chennai – 600 014	santhanabharathidpi@gmail.com	9489432392	500/-
6.	Mr. H. ASHIK AHAMED	Ph.D Research Scholar	The New College (Autonomous), Chennai – 600 014	ashikahamed143@yahoo.com	8148620511	500/-
7.	Ms. K. PRADHOSHINI	Ph.D Research Scholar	The New College (Autonomous), Chennai – 600 014	spradho@gmail.com	9600981987	500/-
8.	Mr. D. UTHIRAKUMAR	Ph.D Research Scholar	Annamalai University, Annamalai Nagar, Chidambaram – 608 002	uthrakumar2748@gmail.com	8675447299	500/-
9.	Mr. T. SHANMUGA SUNDARAM	Ph.D Research Scholar	Annamalai University, Annamalai Nagar, Chidambaram – 608 002	tamilsundar88@gmail.com	9941194418	500/-
10.	Ms. B.J.PRATIMA	Ph.D Research Scholar	Annamalai University, Annamalai Nagar, Chidambaram – 608 002	pratimajayaram95@gmail.com	9790731149	500/-
11.	Mr. R. RAGUNATH	Ph.D Research Scholar	Annamalai University, Annamalai Nagar, Chidambaram – 608 002	ragunath3@gmail.com	8973413182	500/-
12.	Dr. B. VELMURUGAN	Assistant Professor, Department of Zoology	Sir Theagaraya College, Chennai	veluu007@gmail.com	9884211585	500/-
13.	Mr. J. RAWOOF KHAN	M.Sc Student	Sir Theagaraya College, Chennai	khanrawoof1809@gmail.com	8428570950	500/-
14.	Dr. B. PALANI	Guest Lecturer	Govt. Thirumagal Mills Collge, Gudiyatham, Vellore – 632 602	palanineuro@gmail.com	9486841919	500/-

26.07.2021

From

Dr. Senthil,
Advanced Science (OPC) Private Ltd (SENTAC),
No. 668, Velevinayagar Koil Street,
Kanjamanathan Pettai, Kurinjipadi,
Cuddalore, Tamil Nadu - 607 302,
India.

To

Dean Research,
Guru Nanak College (Autonomous),
Guru Nanak Salai,
Velachery, Chennai,
Tamil Nadu - 600 042.

Respected Madam,

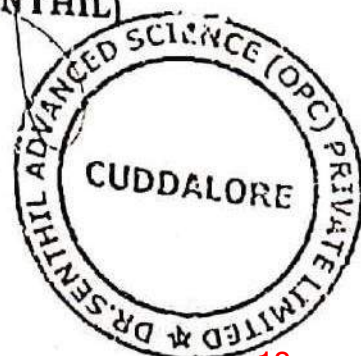
Sub: Requisition to provide the consultancy services - Reg.

I am running a Murrel fish hatchery named Dr. Senthil Advanced Science (OPC) Private Ltd, for the past 18 years in the above said address. Recently we are facing a problem in fry and fingerling stages of Murrel fishes in our hatchery, during the 18th to 25th days of hatching old fries having the spongy appearance on the gill region. Due to this we are facing mass mortality in the rearing tanks. I hope that you can find some remedial measures for the above mentioned issue. So I kindly request you to do the needful and oblige for the same.

Thanking you,

Yours truly,

(Dr. SENTHIL)



From

Date: 03.08.21

Dr. J. Jayanthi
Associate Professor,
Department of Advanced Zoology and Biotechnology,
Guru Nanak College (Autonomous),
Velachery, Chennai – 600 042.

To

Dr. A. Senthilkumar,
The Founder & CEO,
(Dr. Senthil Advanced Science (OPC) Private Ltd),
No.668, Velevinayagar Koil Street, Kanjamanathan Pettai,
Kurinjipadi, Cuddalore,
Tamil Nadu – 607 302.

Dear Sir,

With reference to your earlier letter dated 26.07.2021, I attach the consultancy proposal for pathogenicity study in Murrel fishes along with the recurring and non-recurring expenses which would be incurred for the same. The pathogens will be recorded for every 6 months and catalogued. Kindly do the needful and oblige.

Thanking You,

Yours Sincerely,


(J. JAYANTHI)

Encl: - 1 Copy of proposal

HEAD
Dept. of Adv. Zoology & Biotechnology
Guru Nanak College,
Chennai - 600 042.

ISOLATION AND IDENTIFICATION OF PATHOGENS FROM INFECTED MURREL FISH FRIES

RESEARCH CONSULTANCY PROPOSAL

Dr. J. JAYANTHI, M.Sc., M.Phil., Ph.D.,

ASSOCIATE PROFESSOR & HEAD

PG & RESEARCH DEPARTMENT OF ADVANCED ZOOLOGY AND BIOTECHNOLOGY



GURU NANAK COLLEGE (AUTONOMOUS)

GURU NANAK SALAI, VELACHERY

CHENNAI – 600 042

AUGUST - 2021



GURU NANAK COLLEGE (AUTONOMOUS)
VELACHERY, CHENNAI – 600 042
PG & RESEARCH DEPARTMENT OF ADVANCED ZOOLOGY
AND BIOTECHNOLOGY
PROPOSAL FOR RESEARCH CONSULTANCY

(i) **Work Title: ISOLATION AND IDENTIFICATION OF PATHOGENS FROM INFECTED MURREL FISH FRIES**

(ii) **Introduction**

• **Origin of the research problem**

The Indian aquaculture sector has grown rapidly over the decade. Fresh water aquaculture contributes to over 95% of the total aquaculture production. Murrels are one of the most sorts after fishes in the freshwater aquaculture for their taste and high muscle mass. The main challenges faced today are the development of antimicrobial resistant pathogens that cause serious economic impact in the aquaculture industry. The opportunistic nature of the fungal pathogens is a serious threat to the culture practices where the fish could experience stressful environment and become susceptible to *Saprolegnia*. The *Saprolegnia* have a great impact on the health of the fish. The current study shows that *Saprolegniales* cause high number of mortalities in the Murrel fry and up to if left untreated. Proper care and preventive measures need to be implemented to avoid infection. Various studies show that Saprolegniosis infections are one of the most common and most economical mycotic infections in the aquaculture industry. Numerous species of *Saprolegniales* infecting fish, fish eggs, amphibians and crustaceans have a major impact on freshwater ecosystem. 50% "winter kill" in catfish will be caused by *S. parasitica* in USA resulted in economic loss of 25 million. In the case of salmonid fish, the Saprolegniosis is almost always caused by a single taxon, *Saprolegnia parasitica*.

There is impaired osmoregulation, respiratory failure and in some cases organ failure of diseased fish in the final stage of infection. Eggs of common carp (*Cyprinus carpio*) and catfish (*Pelteobagrus fulvidraco*) will be found to be infected within days as are small in size, in contrast to eggs of salmonid eggs of much larger size, in which infection took much longer to establish.

Hyphal infection is considered to be devastating in aquaculture hatcheries and can spread quickly between neighboring eggs. *S. parasitica* presents a demanding problem in the aquaculture development industry. It is expected that 10% of all hatched salmon succumb to Saprolegniosis, causing major economic loss in an industry accounting for around 30% of the universal fish production for consumption. The occurrence of Saprolegniosis extends to Asian humid aquaculture systems where more than 80% of fish produced by aquaculture comes from the area. The Murrel fish fries are facing a huge problem during the 3rd week to 4th week old fingerlings; hence there is a necessity to originate this research problem.

Significance of the study:

It paves way for identification of pathogens infecting the Murrel fish fries and cataloguing of the pathogens on a regular basis along with monitoring of the physical and chemical parameters present in the hatchery environment will lead to the promotion of aquaculture and addressing maintenance and productivity issues in aquaculture industry thereby increasing the economy of the country.

(iii) Objectives

- ❖ Procurement, acclimatization and regular monitoring of the infected Murrel fish fries.
- ❖ Isolation of fungal pathogen from infected fish.
- ❖ Preparation of pure line cultures of the isolated fungal pathogen.
- ❖ Staining and identification of the isolated fungal pathogen.
- ❖ *In-vitro* studies of antifungal properties of various plant extract on the isolated fungal pathogen.

(iv) Methodology:

Collection of infected fish and fish tank setup

Murrel fingerlings, (average size and weight 2.2 ± 0.2 cm and 0.24 ± 0.06 gm) will be obtained from Vadivelu fish farm, Vadalur. The tank will be well cleaned and dried before the fish will be introduced. After cleaning and drying the tank will be installed in its place and water will be added in the tank. The aerator will be attached to the tank and proper lighting will be also provided. The fish will be then introduced into the tank.

Culture media preparation

The culture media used for the isolation of the fungus will be the SDA media (Sabouraud Dextrose Agar), final pH 5 ± 60.2 at 25°C . The media will be sterilized at 121°C for 10-15 minutes. After sterilization, the media will be allowed to cool to a lower temperature and antibiotics ampicillin and chloramphenicol in the concentration of $10 \mu\text{l}$ per 100 ml of media will be added to the media. The media is then transferred to Petri plates and allowed to cool and solidify. Upon solidification of the media, the fungus from the fish will be isolated and transferred to the media by different methods and incubated at 28°C along with the control plates.

Isolation of fungus

The process of isolation of fungus will be carried out inside a biosafety cabinet. The bio-safety cabinet will be first sterilized using a UV light for 5-20 minutes. Then the UV is turned off and the blower is turned on for 3-5 minutes. Then the hands are cleaned with spirit and the work area is also cleaned using spirit. The materials required for isolation are then taken inside the biosafety cabinet and the isolation process is carried out using four methods such as direct swab method, diluted swab method, Serial dilution method and Tissue transfer method.

Identification of isolated fungal pathogen

The pure line fungal isolate will be incubated for a period of 96-120 hours to enable maximum development. After a span of 96-120 hours of incubation, the fungal isolate will be collected onto a clean glass slide. The fungal pathogen will be stained using Lacto-Phenol Cotton Blue stain. A cover slip will be then placed on the slide and the excess stain will be removed. The slide will be then observed under the light microscope under magnifications ok 10X, 45X, and 100X.

Preparation of phytochemical extracts

The crude phytochemical extracts of the selected plant species in organic powdered form will be procured from the natural and organic herbal stores. The crude extracts will be collected in Eppendorf tubes of 1-1.5ml capacity and mixed with 99.9% ethanol in the ratio of 100 mg per ml. The mixture will be thoroughly mixed and will be allowed to rest for 24 hours. After 24 hours the ethanolic extract will be filtered and the powder will be removed and the liquid extract will be collected and transferred to clean Eppendorf tubes. Similarly, the extracts of spirulina will be also collected and ethanolic extracts of the same will be also prepared. The extracts in the form of essential oil of some plants will be also collected and used. The natural extracts used to test the antifungal properties against the isolated fungal pathogens are *Phyllanthusniruri*, *Syzygiumcumini*, *Terminalia chebula*, *Arthrospiraplatensis*, *Melaleucaalternifolia* and *Eucalyptusglobulus*.

In-Vitro study of antifungal properties of phytochemical extracts against the isolated fungal pathogen

The pure filtered crude extracts of the select plants are collected in clean Eppendorf tubes from which 100 µl of extracts will be pipette out using a micro-pipette and each of them will be added to different Petri plates containing the pure line fungal culture in wells in the culture media about 5 min diameter which are cut using a well cutter. The Petri plates are then incubated for a period of 24hours. The process is carried out inside a biosafety cabinet to avoid any cross-contamination and to ensure maximum safety.

Study the pathogenecity of the isolated fungal pathogen

The infected fish will be observed to study the pathogenecity of the isolated fungal pathogen. The fish will be regularly monitored and the water quality and mortality of the fish will be regularly checked. The pH range will be between 7.5-8.5 and the temperature will be 28.5±5°C. The water in the tank will be changed once every two days.

(v) Day-wise Plan of work and targets to be achieved

S. No	Work Plan	Duration in Days
1.	Procurement, acclimatization and regular monitoring of the infected Murrel fish fries.	01 – 05
2.	Isolation of fungal pathogen from infected fish.	06 - 15
3.	Preparation of pure line cultures of the isolated fungal pathogen.	16 - 25
4.	Staining and identification of the isolated fungal pathogen	26 - 30
5.	In-vitro studies of antifungal properties of various plant extract on the isolated fungal pathogen.	31 - 40
6.	Preparing reports.	41 - 60

**BUDGET FOR RESEARCH CONSULTANCY
NON-RECURRING ITEMS**

S.NO	PARTICULARS	QUANTITY	RATE	AMOUNT IN RS.
1.	Plastic Trough (5 L Capacity)	15	15 X 300	4500
2.	Plastic Trough (10 L Capacity)	12	12 X 500	6000
3.	Plastic Bucket (5 L Capacity)	4	4 X 125	500
4.	Plastic Bucket (20 L Capacity)	2	2 X 500	1000
5.	Plastic Jug (1 Litre)	2	2 X 50	100
6.	Screw capped Borosil Glass Bottle (25 ml)	50	50 X 20	1000
7.	Rectangular Fish Glass Tank (5 Litre)	12	12 X 250	3000
8.	Pasteur Pipette	20	20 X 10	200
9.	Aerator (2 Way)	10	10 X 300	3000
10.	Air Stones	50	50 X 20	1000
11.	Aeration Tube	1 Roll	1 X 2000	2000
12.	Aeration tube connectors T Shape, X Shape, L Shape	3 Packets	3 X 200	600
13.	Air flow Reducer	4 Packets	4 X 100	400
14.	Hand Net	4	4 X 200	800
15.	1 Ml Syringe	40	40 X 10	400
16.	Whose 4 mm Thick	5 Meter	5 X 200	1000
17.	Whose 2 mm Thick	2 Meter	2 X 150	300
18.	Tea Steiner (Small)	4	4 X 50	200
19.	Tea Steiner (Big Size)	4	4 X 50	200
20.	Mosquito Net (Nylon)	2	2 X 250	500
21.	Electrical Charge	--	Per Unit – 5 X 200	1000
22.	Water Charge	1000 L	1000 X 5	5000
23.	Transport Charge	--	--	2000
			Total	34,700/-

RECURRING ITEMS

S.NO	PARTICULARS	QUANTITY	RATE	AMOUNT
1	KmNO4 Pellets	500 gms	500	500/-
2	Formaldehyde	1 Littrre	1000	1000/-
3	Water Quality Parameter Kit	5	1000	5000/-
4	Disease Diagnosis – (Including Culture Plating, Staining and Biochemical Tests)	4000 Per sample	3 X 4000	12000/-
5	Travel Expenses (including hatchery visit and sample procuring) Twice in a year (2 Members To & Fro)	-	2 X 5000	10,000/-
6	Maintenance Charge (In vivo) 5 Months	-	5 X 2500	12,500/-
7	Pathological Screening Charge for 1 Year	-	12 X 15000	1,80,000/-
		-	Total	2,21,000/-

NON-RECURRING – 34,700/-**RECURRING – 2, 21,000/-****Total = 2, 55, 700/-**

Institutional and Departmental facilities available for the proposed work:

Equipments:

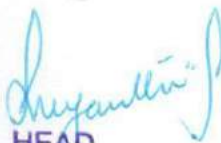
Phase Contrast Microscope, Ultra centrifuge, UV Spectrophotometer, Laminar Air Flow Chambers, Hot air oven, PCR machine, Microtome, Western blotting apparatus and necessary equipment required for the present works are available.

Name & Signature



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PG & RESEARCH DEPARTMENT OF ADVANCED
ZOOLOGY AND BIOTECHNOLOGY
RESEARCH CONSULTANCY REPORT

**ISOLATION AND IDENTIFICATION OF PATHOGENS FROM
INFECTED MURREL FISH FRIES**

Objectives

- ❖ Procurement, acclimatization, and regular monitoring of the infected Murrel fish.
- ❖ Isolation of fungal pathogen from infected fish.
- ❖ Preparation of pure line cultures of the isolated fungal pathogen.
- ❖ Staining and identification of the isolated fungal pathogen.
- ❖ *In-vitro* studies of antifungal properties of various plant extract on the isolated fungal pathogen.

Collection of infected fish and fish tank setup

Murrel fingerlings, (average size and weight 2.2 ± 0.2 cm and 0.24 ± 0.06 gm) were obtained from Vadivelu fish farm, Vadalur. The tank was well cleaned and dried before the fish were introduced. After cleaning and drying the tank was installed in its place and water was added in the tank. The aerator was attached to the tank and proper lighting was also provided. The fish were then introduced into the tank.

Culture media preparation

The culture media used for the isolation of the fungus was the SDA media (Sabouraud Dextrose Agar), final pH 5 ± 60.2 at 25°C . The media was sterilized at 121°C for 10-15 minutes. After sterilization, the media was allowed to cool to a lower temperature and antibiotics ampicillin and chloramphenicol in the concentration of $10 \mu\text{l}$ per 100 ml of media were added to the media. The media is then transferred to Petri plates and allowed to cool and solidify. Upon solidification of the media, the fungus from the fish was isolated and transferred to the media by different methods and incubated at 28°C along with the control plates.

Isolation of fungus

The process of isolation of fungus was carried out inside a biosafety cabinet. The bio-safety cabinet was first sterilized using a UV light for 5-20 minutes. Then the UV is turned off and the blower is turned on for 3-5 minutes. Then the hands are cleaned with spirit and the work area is also cleaned using spirit. The materials required for isolation are then taken inside the biosafety cabinet and the isolation process is carried out using four methods such as Direct swab method, Diluted swab method, Serial dilution method and Tissue transfer method.

Identification of isolated fungal pathogen

The pure line fungal isolate was incubated for a period of 96-120 hours to enable maximum development. After a span of 96-120 hours of incubation, the fungal isolate was collected onto a clean glass slide. The fungal pathogen was stained using Lacto-Phenol Cotton Blue stain. A coverslip was then placed on the slide and the excess stain was removed. The slide was then observed under the light microscope under magnifications of $10\times$, $45\times$, and $100\times$.

Preparation of phytochemical extracts

The crude phytochemical extracts of the selected plant species in organic powdered form were procured from the natural and organic herbal stores. The crude extracts were collected in Eppendorf tubes of 1-1.5 ml capacity and mixed with 99.9% ethanol in the ratio of 100 mg per ml. The mixture was thoroughly mixed and was allowed to rest for 24 hours. After 24 hours the ethanolic extract was filtered and the powder was removed and the liquid extract was collected and transferred to clean Eppendorf tubes. Similarly, the extracts of spirulina were also collected and ethanolic extracts of the same were also prepared. The extracts in the form of essential oil of some plants were also collected and used. The natural extracts used to test the antifungal properties against the isolated fungal pathogens are *Phyllanthus niruri*, *Syzygium cumini*, *Terminalia chebula*, *Arthrospira platensis*, *Melaleuca alternifolia* and

In-Vitro study of antifungal properties of phytochemical extracts against the isolated fungal pathogen

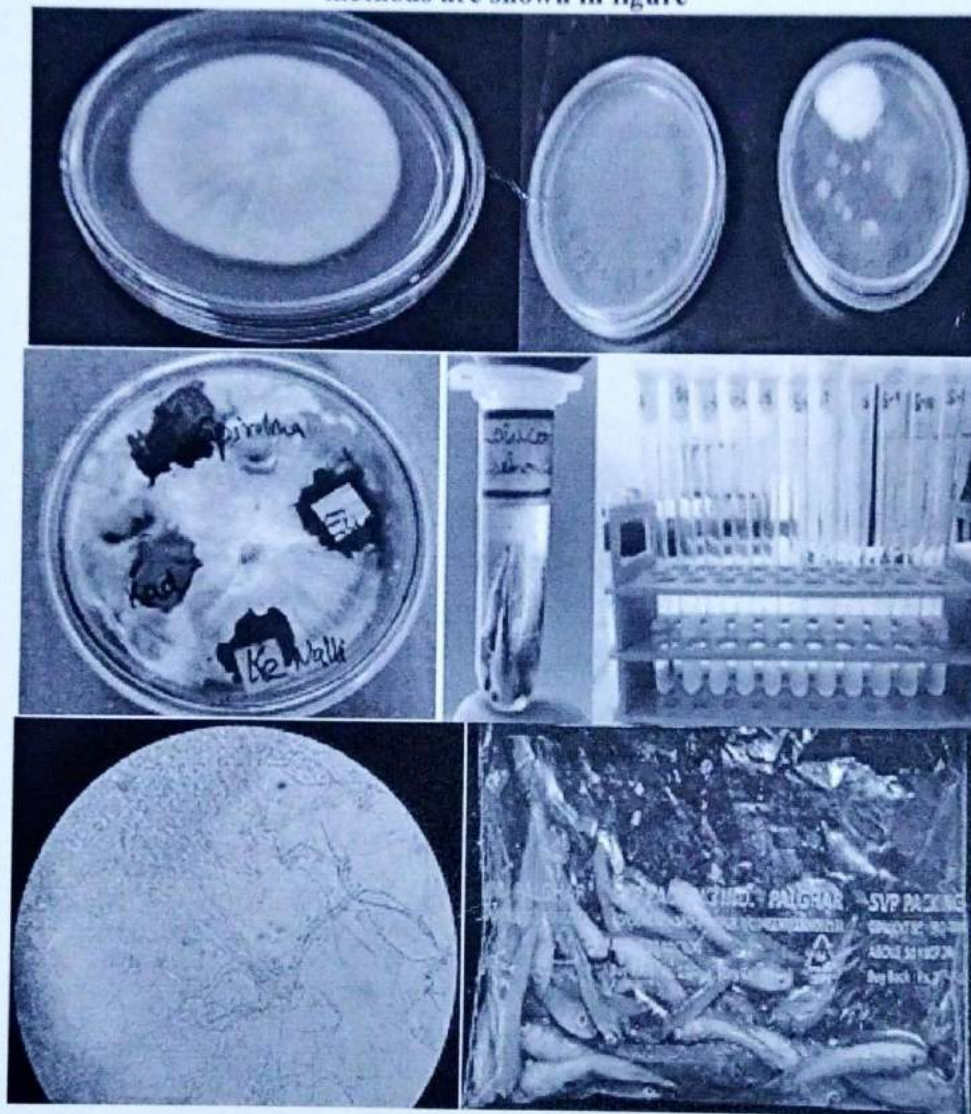
The pure filtered crude extracts of the select plants are collected in clean Eppendorf tubes from which 100 µl of extracts were pipetted out using a micro-pipette and each of them were added to different Petri plates containing the pure line fungal culture in wells in the culture media about 5 mm in diameter which are cut using a well cutter. The Petri plates are then incubated for a period of 24 hours. The process is carried out inside a biosafety cabinet to avoid any cross-contamination and to ensure maximum safety.

Study the pathogenicity of the isolated fungal pathogen

The infected fish were observed to study the pathogenicity of the isolated fungal pathogen. The fish were regularly monitored and the water quality and mortality of the fish were regularly checked. The pH range was between 7.5-8.5 and the temperature was $28.5 \pm 5^\circ\text{C}$. The water in the tank was changed once every two days.

RESULTS

The fungal pathogens isolated from the infected Murrel fries through various methods are shown in figure



Study the pathogenicity of the isolated fungal pathogen

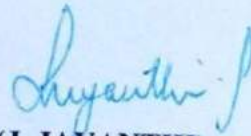
The fish infected with *Saprolegnia* showed various symptoms. The infected Murrels exhibited abnormal behavior like wandering around the corners, abnormal swimming patterns, resting at the bottom of the tank and sluggishness. The infected fries of the Murrel had ulcerative lesions on the body surface and rough skin with necrosis. The lesions had a reddish-black appearance. Slight body fouling was observed in the dead fish. The pathogenicity study was scheduled for 25 days and it was observed that the rate of mortality was 100% in a span of 23 days. The rate of mortality differed from day to day. The water quality parameters and the mortality of the fish on a daily basis is given. The pathogenicity of *Saprolegnia* and the pH of the water are shown in figures.

SUMMARY

- Based on the biological and morphological characters, the fungus isolated from the infected fish *Channa striata* was identified as the *Saprolegnia* genus.
- The fry forms of the Murrel fish were used in the experimental studies to observe the pathogenicity of *Saprolegnia*.
- The fish infected with the *Saprolegnia* were highly susceptible to mortality especially when the water in the tank is not changed or the water is also contaminated with the spores of *Saprolegnia* or other pollutants.
- The fish did not consume food to a large extent and the pathogen caused necrosis on the skin.
- The fish exhibited abnormal swimming patterns, moving to the bottom of the tank and resting there, reddish-black patches on skin and necrosis, loss of appetite, and significant mortality.
- The fungal isolate was cultured on standard SDA media, and the media was enriched with antibiotics Ampicillin and Chloramphenicol to avoid contamination by bacteria.
- The process was carried out inside a biosafety cabinet in aseptic and sterile conditions.

CONCLUSION

Saprolegnia is a genus of fungi that are known to cause the cotton wool disease in fish. They are serious fungal pathogens. They are highly infectious and are found to cause high mortality in *Channa striata*. It, therefore, becomes highly imperative to take caution as to prevent any infection of Murrel fish the *Saprolegnia*. One must be wary of the fact that the fish are highly susceptible to the fungus and regular cleaning of the water and proper diagnostic procedures need to be implemented to avoid infection. It also becomes highly crucial to immediately assess and diagnose any symptoms exhibited by the fish and proper treatment must be administered using antifungal agents or other established remedies. The fish can also be given immune-boosters to aid in the resistance and resilience to the infection by *Saprolegnia*. As the percentage of mortalities caused by *Saprolegnia* is 100%, it becomes exigent that the risk factors be analysed and well maintained. Factors such as water quality, temperature, pH, photoperiod, availability of organic content, over-crowding, etc. need to be constantly and thoroughly checked and kept in control and a conducive environment for the growth of the fish needs to be provided. It hence becomes essential to give good care and select good quality water and food as well as the tanks or ponds need to be regularly cleaned. Based on the experiments conducted it is recommended that the extracts of *Eucalyptus globus* and *Syzygium cumini* can be used to treat the infection of *Saprolegnia* in *Channa striata*.



(J. JAYANTHI)

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Roll No. Dr. A. Senthil Kumar

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