

**Markanda National College Shahabad Markanda**

**Ladwa Road Shahabad**



## **Value Added Course**

**Session -2022-23**

**Title : Hydroponics**  
**Code : CH22**

**Certification : Grading Pattern**

**Duration : 30 Hours**

**Mode of Assessment : Pen and Paper**

**Offered By : Department of Chemistry**  
**Markanda National College Shahabad**  
**Markanda**

**Course Coordinator: Sh. Suresh**

**Principal**  
**Markanda National College**  
**Shahabad Markanda (Haryana)**

**Markanda National College Shahabad Markanda**

**Ladwa Road Shahabad**

The final certificate of completion will be awarded in grade point system given below.

<b>S. No</b>	<b>Percentage of Marks</b>	<b>Grade</b>
<b>1</b>	<b>85 % and above</b>	<b>A+</b>
<b>2</b>	<b>75% to 84%</b>	<b>A</b>
<b>3</b>	<b>65% to 74%</b>	<b>B</b>
<b>4</b>	<b>50% to 64 %</b>	<b>C</b>
<b>5</b>	<b>40% to 50 %</b>	<b>D</b>
<b>6</b>	<b>Below 40%</b>	<b>No Grade</b>

**CERTIFICATE  
COURSE  
IN  
HYDROPONICS**

**Department of Chemistry  
Markanda National College  
Shahabad Markanda**

# **CERTIFICATE COURSE IN HYDROPONICS**

## **HYDROPONICS**

### **CONTENTS**

**Brief Introduction**

**History**

**How to grow plants hydroponically?**

**How to start a hydroponic set up?**

**Hydroponics vs Soil**

**Objectives**

**Methods/ Techniques**

**Benefits**

**Advantages**

**Disadvantage**

**Which crops/plants can grow?**

**Formula for Nutrient solution supply management**

**Climate control management system**

**Challenges**

**Opportunities**

**Plant physiology**

**Plant Growth and development**

**Journey of a hydroponics system from Nursery to production**

**Seed quality**

**Special precautions and care**

**Media and container**

**Role of parameters ( PH, TDS, EC, Irrigation, Water change and change nutrient solution according to plant size**

**Cultivation and reset/restart the hydroponics set up**

## Lesson Structure

There are 30 lessons in this course:

1. Introduction to Hydroponic Technology
2. Plant Growth Requirements – Light , artificial light, light balancers
3. Plant Growth Requirements - Nutrition- nutrient requirements, deficiencies, toxicities, pH, conductivity, salinity, growth regulators
4. Plant Growth Requirements - Temperature
5. Hydroponic Growing Systems - basic concepts and designs, site considerations.
6. Growing Media - types, properties, uses.
7. Hydroponic Nutrient Solutions - nutrient formulae, preparing solutions.
8. Hydroponic Equipment - componentry, nutrient delivery, pumping, testing
9. Growing Structures - Design and Construction - types
10. Environmental Control A - Heating, Cooling
11. Environmental Control B - Lighting, Shading.
12. Environmental Control C - Carbon Dioxide Enrichment
13. Plant Culture In Hydroponics A - trellising, pruning, pollination, transplanting.
14. Plant Culture In Hydroponics B
15. Aggregate Culture
16. Nutrient Film Technique (NFT) Culture
17. Rockwool Culture
18. Other Techniques - wick systems, flood & drain, bag culture, aeroponics, etc.
19. Irrigation - Soil Requirements
20. Irrigation Systems
21. Plant Propagation - seed & cutting propagation & tissue culture

- 22. Market Gardening - Cut Flowers**
- 23. Market Gardening - Vegetables**
- 24. Other Plants In Hydroponics - herbs, grasses, indoor plants**
- 25. Pest and Diseases - Identifying the problem, pests and diseases in hydroponics**
- 26. Weeds - identification and control**
- 27. Managing A Commercial Hydroponics Farm - crop scheduling & selection standards**
- 28. Management - Organization and Supervision**
- 29. Marketing - Promotion and Selling**
- 30. Special Project -Write a detailed report of at least 2,000 words, containing images or diagrams, on a specific element of technology that you have researched that will help you grow.**



**MARKANDA NATIONAL COLLEGE, SHAHABAD (M)**  
**ADMISSION FORM FOR VALUE-ADDED-CERTIFICATE-COURSE**  
**HYDROPONICS FOR BEGINNERS – 150 HOURS COURSE**  
**DEPARTMENT OF CHEMISTRY**  
**SESSION: - 2022-23**

1. Name : SHUBHAM

2. Father's Name : MR VESHVAL

3. Class : BLON III<sup>rd</sup>

4. Roll : 1212112003049

5. Uni. Regn. No. : 210021745

6. Address : VPO - HAKIPUR, THAHLEZAR  
KUR, 136135

7. Phone No. : Home \_\_\_\_\_ Mobile 7419003276

8. Email Id : kapoorshubhamswini@gmail.com Aadhaar No. 201389663901

**DECLARATION :**

- I shall abide by the rules and regulations of the University/UGC regarding Add-on-Courses.
- I have also informed my parents regarding the admission in this course.
- I am willing to pay extra fee for this course fixed by the College/Kurukshetra University, Kurukshetra

Signature of Parents

Signature of Student

**Professor Incharge**  
**Sh. Suresh Kumar (Associate Prof.)**  
**HOD, Chemistry.**

**Principal**  
**Dr. Ashok Kumar**  
**Markanda National College**  
**Shahabad Markanda (Haryana)**

To

The Principal,  
M.N. College,  
Shahabad (M)



Sub:- To conduct the exam of Value Added Course  
on Hydroponics

R/sir  
It is hereby requested that the department  
of Chemistry started the Value Added course on  
Hydroponics in the session 2022-23. Total 8 students  
enrolled in the course. The department conducted  
classes and practicals/trainings. The department  
completed the course within time frame. So,  
the examination of the course is pending. Kindly  
grant me the permission <sup>to conduct</sup> the said exam in the  
last week of Sept. 2023 / 1<sup>st</sup> week Oct. 2023. So that  
students (enrolled) may take up the benefit of the  
course certificate well in time.

Thanking you

Yours sincerely  
Suresh Kumar

Suresh Kumar  
(Prof. Incharge)  
M.N. College, Shahabad (M)

Date - 15/9/2023

Allow  
Pr. fix up the date  
in consultation with Dr. Parman  
Karnal, COE after  
proper notification  
Ashwini  
15-9-23





# HYDROPONICS FOR BEGINNERS

*Plants and vegetables grow without soil*

*Register yourself for Advanced  
Agricultural Technique at:*

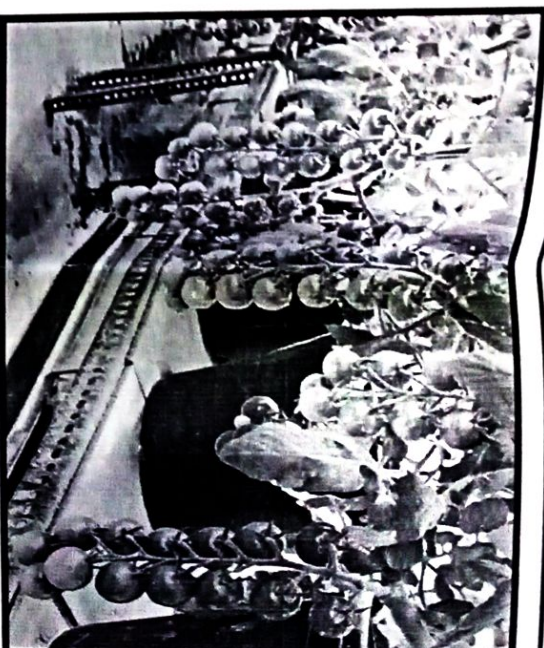
<https://forms.gle/znU554WfpgpqngvmHA>

**A complete step by step study through**

**VALUE ADDED COURSE**

**(Certificate Course)**

**Duration: 150 Hours**



Department of Chemistry, Markanda National College, Shahabad (M)

# MARKANDA NATIONAL COLLEGE SHAHABAD MARKANDA

## Department of Chemistry

### RESULT SHEET

Value Added Certificate Course: **Hydroponics for Beginners**


Session: 2022-23

Maximum Marks: Theory + Practical: 40 + 20

S. No	Name	Class	Roll No.	Marks Obtained		Total Marks	Grading
				Theory	Practical		
1	SHUBHAM	B.Com 2 <sup>nd</sup> Year	1212112003049	32	18	50	A
2	MANVI	B.Sc. 2 <sup>nd</sup> Year	1212112015010	36	19	55	A <sup>+</sup>
3	ANKIT RAI	B.Sc. 2 <sup>nd</sup> Year	1212112015012	36	20	56	A <sup>+</sup>
4	DEEPAK SINGH	B.A. 2 <sup>nd</sup> Year	1212112002059	24	18	42	B
5	SURJEET SINGH	B.Sc. 1 <sup>st</sup> Year	1212112015013	23	14	37	C
6	ABHISHEK KUMAR	B.A. 1 <sup>st</sup> Year	1222112002032	32	19	51	A
7	RAHUL	B.A. 3 <sup>rd</sup> Year	120211002150	AB	AB	-	-
8	VANDANA	B.Sc. 3 <sup>rd</sup> Year	201037818	AB	AB	-	-

  
Suresh Kumar

Course Coordinator

  
Principal  
Dr. Ashok Kumar  
Markanda National College  
Markanda (Haryana)

HYDROPOWER VALU  
**MARKANDA NATIONAL**  
 COLLEGE, SHAHABAD (M)

Class: All Classes (Students)

Section: 2021-22

HYDROPOWER DATES PRESENCE ATTENDANCE

Serial No	Roll No.	NAME	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
1.	1201120212021	SHIVAM AM	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
2	1201120212021	MARVI	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
3	1201120212021	DAVIT PAT	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
4	1201120212021	DSEBARK SURESH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	1201120212021	SUREET SINKH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
6	1201120212021	ADHITHESH KUMAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	1201120212021	RAHUL	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
8	1201120212021	VANDANA	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Added Course 2021-23  
**COLLEGE, SHAHABAD (M)**  
 REGISTER

DATES

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Principal  
 Markanda National College  
 Shahabad Markanda (Haryana)

Lectures Delivered	24
Lectures Absent	0
Previous Lectures Delivered	24
Previous Lectures Absent	0
Total Delivered	24
Total Absent	0
Total Marks	
Assign. Marks	
Attended Marks	



# MARKANDA NATIONAL COLLEGE SHAHABAD MARKANDA

## Department of Chemistry

### ATTENDANCE SHEET

*Value Added Certificate Course: Hydroponics for Beginners*

Session: 2022-23 Maximum Marks: Theory + Practical: 40 + 20

Theory + Practical Classes: 1 Hour + 2 Hours

Course Period: 150 HRS (November 2022- June 2023)

S. No	Name	Class	Roll No.	% age of attendance
1	SHUBHAM	B.Com 2 <sup>nd</sup> Year	1212112003049	90
2	MANVI	B.Sc. 2 <sup>nd</sup> Year	1212112015010	90
3	ANKIT RAI	B.Sc. 2 <sup>nd</sup> Year	1212112015012	91
4	DEEPAK SINGH	B.A. 2 <sup>nd</sup> Year	1212112002059	80
5	SURJEET SINGH	B.Sc. 1 <sup>st</sup> Year	1212112015013	75
6	ABHISHEK KUMAR	B.A. 1 <sup>st</sup> Year	1222112002032	91
7	RAHUL	B.A. 3 <sup>rd</sup> Year	120211002150	75
8	VANDANA	B.Sc. 3 <sup>rd</sup> Year	201037818	50


Practical and theory classes were conducted regularly once in a day respectively because the running Hydroponics set up needs monitoring the P<sub>H</sub> and TDS level for the growing plants/vegetables.

52 Lectures were delivered during the Course (52 × 3 = 156 Hours).

An Extension lecture was delivered by Sh. Arvind Dhakad, Founder, Dhakad Hitech Nursery, Distt. Ratlam (M.P.) on 11<sup>th</sup> May, 2023.

Department of Chemistry of the college organized a DHE Approved National Conference entitled "Green & Sustainable Chemistry: Agriculture and Environment" on 3<sup>rd</sup> June 2023.

  
Suresh Kumar  
Course Coordinator

  
Dr. Ashok Kumar  
Principal