

# Group Project Report for the Year of 2021 – 2022

(Departments of Botany, Chemistry, Mathematics, Physics & Zoology)

DBT Star College Scheme

2021-2022



## JAMAL MOHAMED COLLEGE (Autonomous)

College with Potential for Excellence  
Accredited (3<sup>rd</sup> Cycle) with 'A' Grade by NAAC  
DBT Star College Scheme and DST-FIST funded  
(Affiliated to Bharathidasan University)  
Tiruchirappalli - 620 020

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## Department of Botany

**1) Title of the Project** Influence of fermented plant products on growth rate of an ornamental plant, *Philodendron (Philodendron erubescens)* under hydroponic condition

**Name of the Mentor :** Dr.A.Shajahan

Leslie Jones. A (Reg No: 19UBO001)  
Abdul Kalam. S (Reg No: 19UBO002)  
Sirajuddeen. S (Reg No: 19UBO003)  
Ahamed Riyaz. A (Reg No: 19UBO004)

**Abstract:** Vertical gardening using hydroponics is a new technology of science which has greater commercial importance during recent days. They provide aesthetic effect and maximum utilization of space in crowded urban places. However, cost of production is very expensive due to the higher cost of readymade nutrient solution available in the market. In literature, studies to reduce the cost of production of vertical gardening are very limited. Therefore, the present study was conducted to reduce the cost of production of vertical gardening by recycling fermented plant products as the alternative for commercial nutrients solution. This study was conducted to determine the influence of fermented plant on the growth rate of *Philodendron (Philodendron erubescens)* under hydroponic condition. The results showed that the leaf parameters viz, and root parameters viz, exerted optimum in those *Philodendron erubescens* grown in hydroponic condition with fermented banana peel extract followed by the same condition with fermented Aloe vera extract. Minimum growth rate was recorded in hydroponic condition with lemon peel extract.

**2) Title of the Project:** Metrics For Studying ‘Carbon Banking’ Potential Of Trees In Jamal Mohamed College Campus

**Name of the Mentor:** Dr. A. Aslam

A.K.Arun Prasath (19UBO009)  
A.Mohamed Shahith (19UBO010)  
K.E.Cheran (19UBO011)  
M.S.Azeez Zullah (19UBO012)

**Abstract:** Carbon sequestration potential is known to be stable and consistent for tree species. Educational institutions are best place for growing avenue trees. Irrespective of the economic use of a tree species, being woody, they act as sink for atmospheric carbon. The wooded area is considered as a measure of the amount of fixed carbon in the past by that individual tree. In this regard, a common survey for all avenue trees of Jamal Mohamed College campus was carried out in order to estimate the wooded area as an estimate of carbon banking potential.

### **3) Title of the Project:** Cultivation of Oyster Mushroom and Preparation of Mushroom Cookies

**Name of the Mentor** Dr. K.Mohamed Rafi

P.Devakar (19UBO013)

R.Jegan (19UBO014)

Gokul Kumar (19UBO015)

Gowtham (19UBO016)

S.Gunalan (19UBO017)

**Abstract:** Edible mushrooms are rich in protein, minerals, vitamins other nutritive compounds. Mushroom in cookies helps improve cookies quality alongside fulfil nutrition demand. Cookies are a food for all sections of the people across the broad varieties and shape. This work aimed at preparation of cookies produced from wheat flour fortified with mushroom (*Pleurotus ostreatus*) and spiced with cardamom. Mushrooms are high in protein, carbohydrate, vitamins and fibre but low in fat, rich in vitamins. Wheat flour and mushroom powder taken in the ratio of 5:1. After analysis it has been found that mushroom fortified cookies have high protein content, low fat content, high fibre, minerals and vitamin content which will be

### **4) Title of the Project :** Isolation and Identification of fungi from waste vegetables collected from Gandhi market, Tiruchirappalli.

**Name of the Mentor** Dr. N.Ahmed Sherif

M.Jagatheesh (19UBO019)

R.Jeranal Shine (19UBO021)

J.Divakar (19UB)018)

R.Jeno Antony (19UBO020)

**Abstract:** Vegetables are essential food products which are widely used. The contamination of vegetables by fungi could also result from poor handling practices in the food supply chain, storage conditions, distribution, marketing practices, and transportation. The identification of fungal strain which is responsible for the rotting of a particular vegetable is useful for the production biocontrol agent. Here, twelve vegetables were taken for the study and inoculated in PDA medium at the period of 5-7 days and identified the fungal strains. Totally seven genera of fungi were identified in twelve vegetable.

**5) Title of the Project:** Developing the value added health drink from capillary water of Banana Central Core Stem for Urinary Problems (PHASE I)

**Name of the Mentor :** Dr. B.Balaguru

Mohamed Hassan S (19UBO026)

Mohamed Sabiyulla B (19UBO028)

Loganathan V (19UBO025)

Karthick M 19UBO024)

Mohamed Ussain M (19UBO029)

**Abstract:** In India, more than 20 commercial varieties of different genomic groups of *Musa acuminata* and *M. balbisiana* of *Musa paradisiaca* L. (banana) are cultivated which include Grand Nain, Robusta, Dwarf Cavendish, Red Banana, Rasthali, Poovan (Mysore), Nendran (French Plantain), Virupakshi (Hill Banana), Monthan, Ney poovan, Karpuravalli and Chakia. *Banana central core stem juice* is extracted from the central core stem, which is having property of dissolving kidney stone. Central core of banana central core stem contains about 1.2 % carbohydrate, 0.3 % protein, 0.7% fibre, minerals such as calcium, iron, magnesium and phosphorous in substantial quantities. It is well known that either crushed juice of central core stem or cooked central core stem have taken as medicine for urinary tract problems. Now a day's preference consumption of central core stem is in decreasing trend due to its high fiber content, astringent, bitter taste, and colloidal nature. Hence instead Pseudo stem extract, the Capillary water of banana central core could serve for this purpose. It has less chemical composition compare to the pseudo stem extract and watery nature that traditionally used by the people of Tamil Nadu and Kerala for urinary problem. For developing products, it is essential evaluate the mineral content of this capillary water. For developing products, it is essential to test the changes in microbial and biochemical composition and shelf life of the capillary water. Phase I of this proposed study aims to identify the knowledge on the nutritive value and medicinal uses of Banana plant and to analysis some of the biochemical constituents in the banana central core stem capillary water using ICP-OES instrument. The results of this project revealed that people are knowledge on the medicinal uses of banana but they are not consuming much due to several reasons. Also the capillary water analysed in the study showed that it has more chemical constitutes when compare to the central core stem juice and central core stem. Also aseptic way to collection has to be standardized because the water has the fungal and bacterial growth, which has to be standardized before commercialization. The commercialize product will give additional revenue to banana farmers and entrepreneurs.



**6) Title of the Project:** Applications of Table salt and Vinegar on Green gram and Cowpea Sprout Growth

**Name of the Mentor** Dr. R. Radhakrishnan

Mohamed Nowfil (19UBO030)  
M. Mohammed Majith (19UBO031)  
R.Mukilam (19UBO032)  
A.Najubudeen (19UBO033)  
M.Prabakaran (19UBO034)

**Abstract:** Sprouts contains rice amount of nutrients and antioxidants. In this study was aimed to identify the suitable concentration of table salt and vinegar for green gram and cowpea sprouts growth. The different concentrations of table salt (0.1%, 0.2%, 0.3% and 0.4% of NaCl) and vinegar (1.0%, 3.0%, 5.0% and 7.0% of vinegar) were applied on green gram and cowpea seeds. Among these, 0.4% of NaCl and 5.0% of vinegar treated seedlings was significantly enhanced the length, fresh and dry weight of green gram and cowpea along with increased amount of antioxidants. In this study suggested that the application of low concentration of NaCl (0.1%) and vinegar (5.0%) on green gram and cowpea would be useful to enhance the health beneficial contents in their sprout.

**7) Title of the Project:** Morphological and anatomical modification of *Macrotyloma uniflorum* (Lam). Under Boron Deficiency

**Name of the Mentor:** Dr. R. Sathish kumar

S. Ragunath (19UBO035)  
G.R. Sathyamoorthy (19UBO036)  
K.Subahani (19UBO037)  
R.Surya (19UBO038)  
Zunaid U (19UBO040)

**Abstract:** Boron (B) is a structural component of plant cell wall and B deficiency causes disruption in development of plants. In this work, influence of low B supply on plants morphology and anatomy studies were conducted on *Macrotyloma uniflorum*. Boron deficiency symptoms were observed in this species including anatomical and morphological observation of the plant. Microscopic examination taken to discuss the detailed anatomical properties and changes due to boron deficiency. Anatomical alterations due to Boron deficiency observed in the leaf blades followed by the petiole, stem and roots. Our results revealed that, there are many remarkable disruptions horse gram due to boron deficiency.

**1) Title of the Project:** A Study of the factors affecting the foaming capacities of different detergent soap

**Name of the Mentor:** Dr. M. Mohamed Sihabudeen

|                      |             |
|----------------------|-------------|
| Abdul Basheeth. P. S | (19UCH001)  |
| Abdul Hadhi. A       | ( 19UCH002) |
| Abdul Kalam Asath. M | (19UCH003)  |
| Abdul Rahman. J      | (19UCH004)  |
| Abdul Wahith. M      | (19UCH005)  |
| Abdulla. M           | (19UCH006)  |

**Abstract:** Foaming capacity of soap is maximum in distilled water as compared to that in tap water. The soap for which the time taken for the disappearance of foam is highest has maximum foaming capacity and is the best quality soap among the soaps tested. The foaming capacity and hence the cleansing capacity of different samples of soaps is in the order Sample C > Sample B > Sample D > Sample E > Sample A from this experiment, we can infer that SAMPLE C has the highest foaming capacity, in other words, highest cleaning capacity, On the other hand is found to have taken the least amount of time for the disappearance of foam produced and thus SAMPLE A is said to be having the least foaming capacity and cleansing capacity.

**2) Title of the Project :** Analysis and comparative study of permissible of chemical in the easily accessible drugs

**Name of the Mentor:** Dr. M. Seeni Mubarak

|                    |            |
|--------------------|------------|
| Mohamed Nowfal A   | (19UCH055) |
| Mohamed Rabik S    | (19UCH056) |
| Mohamed Riyash R   | (19UCH057) |
| Mohamed Sheik      | (19UCH058) |
| Alavudeen B        |            |
| Mohamed Umar A M S | (19UCH059) |
| Divin S            | (19UCH060) |

**Abstract:** Acetaminophen otherwise known as Paracetamol, is a widely used nonprescription analgesic and antipyretic medication for mild-to-moderate pain and fever. Harmless at low doses,

paracetamol has direct hepatotoxic potential when taken as an overdose and can cause acute liver injury and death from acute liver failure. Even in therapeutic doses, paracetamol can cause transient serum aminotransferase elevations. However the contamination levels of chemicals using spectrometry the intensity of absorbance for commercial medical sample paracetamol is measured and Beer's law is obeyed in the concentration range of 10-180Mg of paracetamol in final volume of 25ml.

**3) Title of the Project:** Transesterification reaction and comparative study of the fuel properties of biodiesels produced from used cooking oil.

**Name of the Mentor:** Dr. A. Jafar Ahamed

|                         |            |
|-------------------------|------------|
| Mohamed Yasir A         | (19UCH061) |
| Mohammad Sulaiman M     | (19UCH062) |
| Mohammed Imthiyas       | (19UCH063) |
| Aslam S ohammeddhanseer | (19UCH064) |
| B                       |            |
| Muhammad A S            | (19UCH065) |
| Mukesh A                | (19UCH066) |

**Abstract:** Biomass, of animal or plant origin, has been a highly sought-after energy resource for centuries. Like bio ethanol, biodiesel is a fuel produced from biomass and mainly vegetable oils or animal fats. The production of these fuels helps to reduce greenhouse gases and stimulate the local economy. This bibliographic synthesis constitutes a scientific contribution to the production of quality biodiesel, produced locally and more profitable. To do this, we consulted and synthesized the recent information available. Comparisons were also made. At the end of this research, it appears that biodiesel is generally produced by transesterification, inter esterification, micro emulsification or pyrolysis in order to approximate its characteristics to those of petrodiesel. Transesterification is the most widely used because of its low cost, simplicity, best yields and the quality of the biodiesel obtained. To optimize biodiesel production in this way, operating parameters must be controlled. These are: the type and concentrations of alcohol and catalyst used, the temperature and reaction time, the water content of the alcohol and vegetable oil, the free fatty acid content of the oil and the agitation rate of the reaction medium. The use of distilled water for purification, thin layer chromatography for the quantification of ethyl esters and a probable substitution of the base by a solution of ash from palm nut residues or cotton seeds, would be an asset to limit economic burdens and encourage local production.

**4) Title of the Project :** Determination of different qualities of milk samples available in the market.

**Name of the Mentor:** Dr. M. Syed Ali Padusha

Abdullah. R (19UCH007)

Adnan Fawaz. K (19UCH008)

Ajay Sriram. R (19UCH009)

Aminudeen. B (19UCH010)

Anvardeen. N (19UCH011)

Aravind. K (19UCH012)

**Abstract:** The present study was carried out for quality and safety assessment of cow milk samples was collected. The milk samples were collected from dairy shops, vendors and milk producers and evaluated on the basis of various analysis tests, physical-chemical properties, proximate estimation and chemical studies following the standard procedures. The variation in the concentration of different components found in milk depends on mammalian species, genetic, physiological, nutritional factors, and environmental conditions. Here, we analyze, for the first time, the content of different components in milk of different brands. The high quality milk should have better density and is free from the adulterants. Milk is most commercially sold commodity both by local vendor's as well super markets. However in local areas to increase the yield certain adulterants are added which may affect the nutritional quality of milk. Milk adulteration is a social problem. It exists both in the backward and advanced countries. Consumption of adulterated milk causes serious health problems and a great concern to the food industry. The Country milk producers and consumers facing problem to find the quality of milk, accept the fair of price and consumption. So it is necessary to ensure the quality of milk by measuring type and amount of adulterants that are added to the milk. This is performed by using combined electronic sensory instrumental system such as p H electrodes. The different quality parameters such as colour, density, pH, adulterates and chemical content are also noted. Food safety and food security are very much at the top of the agenda in India, so it is of utmost importance to screen the quality of milk and milk products in the market for avoidance of skimming practices and/or adulteration of milk with water and human health problems

**5) Title of the Project :** Detection of contamination level of chemicals in easily accessible drugs

**Name of the Mentor:** Dr. A. Jamal Abdul Nasser

Arshadh Faheem. A (19UCH013)  
Arunchithresh. S (19UCH014)  
Arunkumar. V (19UCH015)  
Ashik. S (19UCH016)  
Asker Ahamed. K (19UCH017)  
Azhagarsamy. G (19UCH018)

**Abstract:** Biomass, of animal or plant origin, has been a highly sought-after energy resource for centuries. Like bio ethanol, biodiesel is a fuel produced from biomass and mainly vegetable oils or animal fats. The production of these fuels helps to reduce greenhouse gases and stimulate the local economy. This bibliographic synthesis constitutes a scientific contribution to the production of quality biodiesel, produced locally and more profitable. To do this, we consulted and synthesized the recent information available. Comparisons were also made. At the end of this research, it appears that biodiesel is generally produced by transesterification, inter esterification, micro emulsification or pyrolysis in order to approximate its characteristics to those of petrodiesel. Transesterification is the most widely used because of its low cost, simplicity, best yields and the quality of the biodiesel obtained. To optimize biodiesel production in this way, operating parameters must be controlled. These are: the type and concentrations of alcohol and catalyst used, the temperature and reaction time, the water content of the alcohol and vegetable oil, the free fatty acid content of the oil and the agitation rate of the reaction medium. The use of distilled water for purification, thin layer chromatography for the quantification of ethyl esters and a probable substitution of the base by a solution of ash from palm nut residues or cotton seeds, would be an asset to limit economic burdens and encourage local production.

**6) Title of the Project :** Assessment of various milk quality parameters

**Name of the Mentor:** Dr. A. Zahir Hussain

|                          |            |
|--------------------------|------------|
| Dhanveerul Irfan.A.K     | (19UCH019) |
| Dinesh Bani. S           | (19UCH020) |
| Ejaas Mubarak. A         | (19UCH021) |
| Elavarasan. S            | (19UCH022) |
| Ghouse Tameem Baig. M. M | (19UCH023) |
| Gowtham. R               | (19UCH024) |

**Abstract:** In the present study , the four types of commercial milks such as Aavin, Arokya, society and Vijay milk are collected. All milk samples are subjected to preliminary physico – chemical analysis. Using standard procedure, starch, glucose, salt and urea were determined in all milk samples. Hence the preliminary study confirms all samples have mainly starch. Because starch is added as adulterant to reduce the excess amount fat in milk. Also all samples have glucose as an adulterant. Because, glucose gives milk a slight sweet taste and it is primary source of energy. And also a little amount of urea is naturally present in al milk. The reason is mammals like cow etc... are mainly took grass and dumping wastes as their diet, so urea is naturally occurred on their breeder milk. All these samples had some adulterants to balancing and increasing physico chemical properties of milk. Thus these samples were assessed by qualitative analysis. Further this study has to determine quantitatively to measure the quantity of some adulterants in milk.

**7) Title of the Project :** Detection of food additives in packed foods; Presence of Caramel in food sample

**Name of the Mentor:** Dr. J. Sirajudeen

|                   |            |
|-------------------|------------|
| Hameed Ibrahim. A | (19UCH025) |
| Imran. H          | (19UCH026) |
| Inbanathan. R     | (19UCH027) |
| Jayakumar. S      | (19UCH028) |
| Jeeva. K          | (19UCH029) |
| Jeeva. S          | (19UCH030) |

**Abstract:** Food Additive means any substance not normally consumed as a food by itself and not normally used as a typical ingredient of the food ,whether or not it has nutritive value, the intentional addition of which to food for a technological (including organoleptic) purpose in the manufacture, processing, preparation, treatment , packing, packaging transport or holding of such

food results, or may be reasonably expected to result (directly or indirectly) in it or its by products becoming a component or otherwise affecting the characteristics of such foods. In food additives one of the products is used as food colours, in a packed food like Caramel. Caramel, defined as colouring agent and as an antioxidant, is being used in several kinds of food products. It has been classified into 4 classes to satisfy the requirement of several food and beverage systems. The variation in its consistency owing to its basic content of milk solids, sugars, and fat has been studied. Several methods have been found to estimate the amount of colour provided by caramel in food products.

**8) Title of the Project :** *In silico* ADME properties of phenolic acids of corn silk

**Name of the Mentor:** Dr. K. Loganathan

|                     |            |
|---------------------|------------|
| Karthick Raja. G    | (19UCH031) |
| Karthik Bharathi. S | (19UCH032) |
| Karthikeyan. R      | (19UCH033) |
| Kishore. P          | (19UCH034) |
| Krishna Kumar. R    | (19UCH035) |
| Krishnan. N. S      | (19UCH036) |

**Abstract:** The long shiny fibers at the top of an ear of corn are called corn silk. Corn silk is used as a medicine. It contains a number of phytochemical compounds - phenols, polyphenols, phenolic acids, flavonoids, flavone glycosides, anthocyanins, carotenoids, terpenoids, alkaloids, steroids, lutein, tannins, saponins, volatile oils, vitamins, some sugars, and polysaccharides. Corn silk is used for chest pain (angina), high blood pressure, preventing a group of eye disorders that can lead to vision loss (glaucoma), and many other conditions, but there is no much scientific evidences to support these uses. In order to understand the mechanism of the phenomenal effect, we tried to study ADME properties exclusively phenolic acids of corn silk by *In Silico* method adopting Swiss-ADME web tool. Physicochemical Properties like molecular weight, molecular refractivity, count of specific atom types and polar surface area, Lipophilicity ( $\log P_{o/w}$ ), Pharmacokinetics, Drug-likeness, Bioavailability Score, Boiled-Egg are determined. The results obtained reveals that it may be treated as baseline data for further studies.

**9) Title of the Project :** Detection of chemical additives in packed commercial Gingelly oil.

**Name of the Mentor:** Dr. M. Anwar Sathiq

|                                  |            |
|----------------------------------|------------|
| Lakshmi Narayanan. B             | (19UCH037) |
| Lalshikanther Basha. A. L        | (19UCH038) |
| Madhan. A                        | (19UCH039) |
| Manikandan. P                    | (19UCH040) |
| Mohamed Abdullah Lebbai.<br>V. N | (19UCH041) |
| Mohamed Abubackker<br>Sithick. A | (19UCH042) |

**Abstract:** In recent times, Gingelly oil is highly appreciated by consumers due to its sensory qualities, antioxidants activity and nutritional benefits, despite its high price. Also, the detection and quantification of adulteration both are problem with increasing importance in the consumer's health and food industry. The goal of this study was to spread attentiveness about the purity of gingelly oil. We purchased six popular brands of refined gingelly oil and to evaluating their purity by physical (colour and transparency) and chemical (acid value and saponification value) methods. Both qualitative and quantitative analysis of food adulterants is an important for health, wealth and economic issue that needs to be fast and simple. In the light of the statistical and experimental results, all the six brands are met out the minimum standard. Therefore, all are good for common consumption. So, apart from all the above discussion the conclusion was made that plant oils are good for consumption as it contains unsaturated fatty acids as well as plant oils are rich in phytosterol i.e. sistosterol, which lowers the cholesterol absorption in human beings. Keywords: Gingelly oil; Acid Value; Saponification value; Sistosterol

**10) Title of the Project :** Purity validation of acetaminophen in easily available drug samples

**Name of the Mentor:** Dr. M. Purushothaman

|                           |            |
|---------------------------|------------|
| Mohamed Abulanser. M      | (19UCH043) |
| Mohamed Anas. I           | (19UCH044) |
| Mohamed Arif. A           | (19UCH045) |
| Mohamed Arsath Parvees. P | (19UCH046) |
| Mohamed Ashik. M. P       | (19UCH047) |
| Mohamed Asick. I          | (19UCH048) |

**Abstract:** HPLC methods were developed and validated for the estimation of SRT in the presence of its degradation products. LOD and LOQ reported by this method are comparable to the reported one in previous literatures. The most striking feature of the developed method is its simplicity, accuracy, and rapidity. The behavior of SRT under the hydrolytic stress conditions in acid, neutral,



alkaline, and oxidative media was studied. The information presented herein could be very useful for quality monitoring of bulk substance as well as the pharmaceutical preparation

**11) Title of the Project :** Review on investigation of foaming capacity of different washing soap

**Name of the Mentor** Dr. K. Riaz Ahamed

|                  |            |
|------------------|------------|
| Muruganantham S  | (19UCH067) |
| Nandhakumar S    | (19UCH068) |
| Sheik Abdullah H | (19UCH069) |
| Niyaz Ali        | (19UCH070) |
| Parvesh Jubair K | (19UCH071) |

**Abstract:** Aim is to investigate foaming capacity of different washing soap and effect of addition of sodium carbonate on them. Soaps and detergents are cleaning ingredients that are able to remove oil particles from surfaces because of their unique chemical properties. Soaps are created by the chemical reaction of a jetty acid with on alkali metal hydroxide. In a chemical sense soap is a salt made up of a carboxylic acid and an alkali like sodium of potassium. The cleaning action of soap and detergents is a result of thrill, ability to-surround oil particles on a surface and disperse it in water.

**12) Title of the Project :** Determination of quality of different samples of milk

**Name of the Mentor:** Dr. S. K. Periyasamy

|                |            |
|----------------|------------|
| Praveen S      | (19UCH073) |
| Praveenkanth S | (19UCH074) |
| Prethiviraj V  | (19UCH075) |
| Ragul N        | (19UCH076) |
| Raja R         | (19UCH077) |
| Rajkumar D     | (19UCH078) |

**Abstract:** Eight parameters were studied for four different brands of milk available in the market. It is found that all the parameters studied were within the permissible limit in all four samples. Presence of Chloride is found in two samples viz., VKA and Kossa. This study helps the consumer to understand the qualities of milk

**13) Title of the Project :** Detection of chemical additives in packed foods

**Name of the Mentor:** Dr. J. Muneer Ahamath

|                   |            |
|-------------------|------------|
| Ramesh Aravinth S | (19UCH079) |
| Preethish Kumar M | (19UCH080) |
| Riyas Ahamed H    | (19UCH081) |
| Sakthidasan P     | (19UCH082) |
| Sanjaynathan K    | (19UCH083) |
| Sathakkadullah A  | (19UCH084) |

**Abstract:** Adulterated/Additive food not only consists of the physical adulterated particles other than food, but it also hosts pathogens which can cause harmful diseases. Adulterated/Additive food causes both physical and mental disorders along with malnutrition. Hence we must avoid eating such food. Also the government needs to take necessary actions against the companies and individuals who for the sake of their own profit are manufacturing and selling adulterate/additives products to consumers. The above research work clearly reveals that the adulterated substances create a worst condition in the human body. In this research work, we find that the Turmeric powder contains a little quantity of ash which proves the food insecurity and also helps to know about the incidental adulteration in the turmeric powder.

**14) Title of the Project :** Study on physico-chemical analysis of ground water quality in Tiruchirappalli city.

**Name of the Mentor:** Dr. R. Abdul Vahith

|                    |            |
|--------------------|------------|
| Shakil Ahamed A    | (19UCH085) |
| Sheik Allavudeen B | (19UCH086) |
| Shyam Prasad G     | (19UCH087) |
| Sivasurya E        | (19UCH088) |
| Soundar Rajan K    | (19UCH089) |
| Sridhar B          | (19UCH090) |
| Srinivasan B       | (19UCH091) |

**Abstract:** Groundwater is a very important natural resource and has a significant role in the economy. It is the main source of water for irrigation and industries. Totally, five samples were collected from five different areas in Tiruchirappalli city and all the collected samples were subjected to physico-chemical analysis in our laboratory. The results proved that the temperature, turbidity, pH, DO, Ca, Mg, TH, Na and K are within the permissible limit of WHO. EC, TDS and

Salinity are above the permissible limit. The present study indicates that the groundwater is not fit for drinking purpose but can be used for domestic and other purposes.

**15) Title of the Project :** Study of corrosion resistance of zinc metal by using *Annona Squamosa* plant leaves

**Name of the Mentor:** Dr. S. S. Syed Abuthahir

Mohamed Bathusha. M (19UCH049)

Mohamed Faizal. M (19UCH050)

Mohamed Imran. K (19UCH051)

Mohamed Irfan. S (19UCH052)

Mohamed Mafathe. J (19UCH053)

**Abstract:** The present study is to evaluate the performance of plant leaves as corrosion inhibitor to control the corrosion of zinc metal immersed in sodium chloride solution. The corrosion inhibition efficiency and corrosion rates were calculated by loss of weight of zinc metal. The weight difference has been measured before and after immersion of zinc metal dipped in sodium chloride solution with and without presence of inhibitor. When compare to blank and inhibitor, in the presence of inhibitor, the weight loss of zinc metal is reduced. Maximum concentration of inhibitor is fixed as 10% if an aqueous extract of *Annona squamosa* because after that concentration, inhibitor dissociate and goes into solution side. The mechanistic aspects of corrosion have been analyzed by electrochemical studies such as polarization study and impedance spectra. In polarization study, the corrosion potential value decreases which helpful to predict whether it controls anodic and cathodic reactions. The corrosion current and tafel slopes values changed when compare to blank and inhibitor system. From impedance measurement, the charge transfer resistance, linear polarization resistance and phase angle increases when compared blank and inhibitor systems. The double layer capacitance of both blank and inhibitor solution were measured. The double layer capacitance value decreases for inhibitor system. Based on the above results, it is confirmed that by the addition of plant leaves which control the corrosion of zinc metal immersed in sodium chloride solution.

**16) Title of the Project :** Detection of Chemical Additives in Packed Foods

**Name of the Mentor:** Dr. M. Yaseen Mowlana

|                     |            |
|---------------------|------------|
| Sudhakar K A        | (19UCH092) |
| Surya Prakash M     | (19UCH093) |
| Syed Abuthahir<br>A | (19UCH094) |
| Thalha M            | (19UCH095) |
| Thangathamilan<br>S | (19UCH096) |
| Tharik Anwar M      | (19UCH097) |
| Thirukumaran B      | (19UCH098) |

**Abstract:** Adulterated/Additive food not only consists of the physical adulterated particles other than food, but it also hosts pathogens which can cause harmful diseases. Adulterated/Additive food causes both physical and mental disorders along with malnutrition. Hence we must avoid eating such food. Also the government needs to take necessary actions against the companies and individuals who for the sake of their own profit are manufacturing and selling adulterate/additives products to consumers. The above research work clearly reveals that the adulterated substances create a worst condition in the human body. In this research work, we find that the Turmeric powder contains a little quantity of ash which proves the food insecurity and also helps to know about the incidental adulteration in the turmeric powder.

**17) Title of the Project :** Detection of Chemical Preservatives in Packed Product

**Name of the Mentor:** Dr. S. Farook Basha

|                 |            |
|-----------------|------------|
| Thoufeeq Raja J | (19UCH099) |
| Vasanthakumar P | (19UCH100) |
| Venkatraman K   | (19UCH101) |
| Vetrivel R      | (19UCH101) |
| Yogarajan M     | (19UCH102) |
| Yogeshkumar S   | (19UCH103) |
| Yuvaraj M       | (19UCH104) |

**Abstract:** According to FSSAI standard the permissible limit of benzoic acid is 200PPM. wherever the benzoic acid contained in a given jam sample is 0.51 PPM. Based on the above, we conclude that, The commercial Jam which was taken as the sample for determination, contains 0.51PPM of benzoic acid derivative which is under the limit of FSSAI . the limit of benzoic acid derivative is used as an additive in the commercial Jam as 0.51PPM

### 1) Title of the Project An Analyse On Reasons From Arts Students For Choosing Arts Stream

Name of the Mentor Dr. U. Abuthahir

|                      |            |
|----------------------|------------|
| Abdul Rahman Mohamed | (19UMA001) |
| Aathil R             |            |
| Mohamed Ashik I      | (19UMA029) |
| Mohamed Ashiq J      | (19UMA030) |
| Mohamed Gani M       | (19UMA032) |
| Saravanan R          | (19UMA053) |
| Yasar Arafath A      | (19UMA064) |

**Abstract:** As many colleges reported that there is a decrease in the strength in science streams in recent academic years. As to find the solution for this problem we collect some main possible reasons from the Arts students through a Survey and with help of SPSS tool we give the solution for this problem. By the end of this project, we came to know that 80% of Science Streams is been ignored by students because the students think the particular subject is hard to learn. Nothing is hard and Nothing is easy in this world but “The we approach it Matters”. This Project will definitely aware the Teachers and Parents. If we try to rectify the reasons (received from the students) we can definitely increase the admissions for Science Stream in future academic years.

### 2) Title of the Project: Impact of Social Networking sites among under graduate students during Covid 19 Pandemic

Name of the Mentor Dr. A. Prasanna

|                        |            |
|------------------------|------------|
| Mohammed Imthiyas S    | (19UMA040) |
| Mohamed Ismail M       | (19UMA034) |
| Mohamed Musavirudeen M | (19UMA036) |
| Asan Sherif A          | (19UMA006) |
| Bharathikannan S       | (19UMA008) |

**Abstract:** During the outbreak of the COVID-19 pandemic, interpersonal interactions are restricted to social networks. Undergraduate students are isolated in their homes and dorms. Loneliness is closely related to psychological distress. Fear of contracting the disease will worsen psychological distress. The purpose of this study is to assess the severity of depression, anxiety, and stress symptoms because of accessing social media networking sites among undergraduate

students during the COVID-19 lockdown. An online survey was used to recruit nearly 150 participants for this cross-sectional descriptive study. Self-reported questionnaires were used to collect data on social networking usage. By the end of this project we came to know that most of the students spent their time on entertainment and for their study purpose using social networking sites. Social networking sites has positive as well as negative side. This project will definitely give an awareness to the people and the government about the usage of networking sites by the students. So, government should take action against unwanted sites

### **3) Title of the Project** Mental Health among under graduate students in Covid-19 Pandemic

**Name of the Mentor :** Mr. S. Masoothu

Hasan Malik S (19UMA014)  
Shuhail Ahamad S (19UMA055)  
Mohamed Kani H (19UMA035)  
Jailani K (19UMA018)  
Hussain Mohamed J (19UMA015)  
Hyder Ali A (19UMA016)

**Abstract:** The COVID-19 pandemic has created a mental health crisis among college students in India due to lockdown restrictions, overwhelming numbers of COVID-19 cases, financial difficulty, etc. This mental health crisis has led to high degrees of Fear, anxiety, and depression among college students. During the COVID-19 pandemic, a decrease in well-being and an increase in mental health problems were registered in medical and psychotherapeutic practices, counselling centers and clinics. Younger people and women seemed to be particularly affected. The aim of this study was to describe mental health problems of students and to draw consequences for the further handling of pandemics and other crises.

The aim of this study is to investigate symptoms of fear, depression, and anxiety due to the COVID-19 pandemic among college students in India. Over 55% of college students have experienced mental health symptoms due to the pandemic, according to in our survey. Nearly half percent of students struggle with isolation, anxiety, and a lack of focus on study. Students have also found it difficult to participate in online classes and complete homework. The Impact of COVID-19 mental health among college students social Distancing and Isolation infections, reduced access to family, friends, and other social support systems have increasing mental issues like anxiety and depression, suicide.

**4) Title of the Project:** Application of Number Theory in Cryptography

**Name of the Mentor :** Mr. N. Mohamed Thoiyab

|                    |             |
|--------------------|-------------|
| A.Mohamed Iqbal    | (19UMA002)  |
| A.Anvar Basha      | (19UMA004 ) |
| A.M.Mohamed Aathil | (19UMA026 ) |
| B.Tamil Selvan     | (19UMA041)  |
| M.Musthak          | (19UMA042 ) |
| M.Veeramani        | (19UMA062 ) |

**Abstract:** Number theory plays a vital role in cryptography, this project focuses on applications of primes and liner congruence's in cryptography. Also the RSA algorithm and some generalization of RSA are discussed with suitable numerical examples. In our project, the RSA algorithm is used and some generalization of RSA is given. The outcome of this generalization is to improve the security level in data transmission between the sender and receiver even though it is complicated while performing calculations. Maple programming language is used for simplifying the complex calculations in generalization of RSA algorithm. The main impact of RSA cryptography is for securing the data. RSA encryption is often used in combination with generalized RSA encryption schemes, or for digital signatures which can prove the authenticity and integrity of a message.

**5) Title of the Project:** Comparative Study on electric vehicles and conventional (fuel) vehicles

**Name of the Mentor:** Dr. A. Mohamed Ismayil

|                 |            |
|-----------------|------------|
| Dhayanithi M    | (19UMA010) |
| Tamil Selvam S  | (19UMA057) |
| Thomas Edison A | (19UMA058) |
| Vasan R         | (19UMA059) |
| Yogaraj C       | (19UMA066) |
| Yogesh M        | (19UMA067) |

**Abstract:** The research is focusing on the research of current situation for the buyers and the less and more favorable conditions in Indian automobile industry. The principal of the report is a comparative research of electric vehicle and conventional vehicles. In addition to this, the project focuses on the total cost of ownership of owning Electric vehicle instead of the conventional vehicle in the Indian market. The research also emphasizes on manufacturer perspective by finding out the best segment to launch an electric vehicle in India. In addition, the project assumptions are used in the formation of a questionnaire focusing on finding out about the awareness of electric vehicles among the publicity nowadays. The final statement that is going to be approved or rejected

is the electric vehicle as a better alternative to the conventional vehicle in India. This project observed that 60.12% people agree with the e-vehicle benefits. So here we reach our conclusion E- bike is the futuristic bike and majority of people would like to buy e-vehicle and own it. This project definitely aware the people, e-bile will reduce the air pollution and know about the subsidiary given by the government to buy the e-vehicle.

**6) Title of the Project:** Covid-19 Awareness among under graduate students in Tiruchirappalli region (A Questionnaire Based Survey Using SPSS)

**Name of the Mentor:** Dr. S. Mohamed Yusuff Ansari

Ahamed Ashik Ali A (19UMA003)

Kaja Sherip S (19UMA021)

Kamala Kannan S (19UMA023)

Mohamed Rizwan A (19UMA037)

Nafis Ahamed A (19UMA044)

Yasar Arafath P M (19UMA065)

**Abstract:** The rapid and extensive spread of the COVID-19 pandemic has become a major cause of concern for the healthcare profession. The aim of this study is to assess the awareness of COVID-19 disease and related infection control practices among under graduate students in the Tiruchirappalli region. The overall awareness for all subgroups was adequate with “85%” reporting correct answers. The highest percentage of correct responses were from undergraduate “ B.Sc zoology” students and the lowest was from “ B.Sc computer Science”. Less than half of the total respondents could correctly define “close contact.” More than three-fourths of the responders were aware of the various infection control measures like rapid triage, respiratory hygiene, and cough etiquette and having a separate, well ventilated waiting area for suspected COVID-19 patients. However, more than “70 percent” of the responders were aware of the correct sequence for the application of a mask/respirator, and only 12.9% of the responders were aware of the preferred hand hygiene method for visibly soiled hands. And “75% of the responders used “COVISHIELD Vaccine” and remaining used “COVAXIN”. Also more than “95%” of people are two dose vaccinated persons and “4%” are 1<sup>st</sup> dose only persons. There is a need for regular educational interventions and training programs on infection control practices for COVID-19 across all undergraduate students are paramount importance to minimize the risk of transmission to UG students and provide optimal care for them. Also COVISHIELD is the most ACCEPTABLE vaccine among all UG students. And finally more than three fourth of the students(responders) are more aware of COVID-19 disease and they are aware of protection and prevention in COVID.



**7) Title of the Project:** An Intelligent Irrigation System based on Fuzzy Logic Control

**Name of the Mentor:** Dr. A. Nagoor Gani

P. Dhanasekar (19UMA009)

R. Gokul (19UMA011)

D. Gurumoorthy (19UMA012)

A. Mohamed Umar Farook (19UMA038)

M. Muthaiah (19UMA043)

N.Rajdeepak (19UMA049)

**Abstract:** The project is the research on the irrigation system on agricultural land .By using this method we can control the flow of waste water and we can use the controlled water to another plant . By using Fuzzy Logic Control we can control the irrigation level. The system uses fuzzy logic to Decide the duration of watering in an adaptive and precise way. Weather Conditions are the inputs to the fuzzy system. The system input variables based in fuzzy rules were soil water tension and doses of water salinity, being defined three fuzzy sets. The output variables were elected from the biometric and productivity analysis that showed statistically significant differences, namely, plant height, stem diameter, leaf area, green biomass, dry weight, number of fruits, average fruit weight and percentage of disabled fruits. This project observed that 50% people agree with this irrigation system. So here we reach our conclusion that this type of irrigation is useful for more farmers. Major farmer will continue this process to get massive yield. This project definitely aware the people, Fuzzy logic control irrigation system will consume water and it may useful in another way. This may be useful in land were water level is low.

**8) Title of the Project** Statistical analysis of butterfly Distribution in Jamal Mohamed College and awareness on butterfly conservation in Samad School using R Software

**Name of the Mentor:** Dr. M.A Rifathali

Mohamed Yasser (19UMA039)

Kannan J (19UMA024)

Mohamed Azharudeen (19UMA030)

Salai Jeeva Ratchagan (19UMA051)

Prabu R (19UMA028)

Hariharan K (19UMA013)

**Abstract:** The abstract of our project is the statistical analysis of the distribution of butterfly in three different location of Jamal Mohamed College and also creating awareness among the students of sixth to eighth graded Samad Senior Secondary school using the R Software.

They are significant differences between male and female with regarded to the Butterfly

Conservation Awareness, demission and over all awareness at 5% level of significance. Based on Mean Scores Female students are having more Conservation awareness of butterfly. The Female students is obtaining from the high level of awareness is 8.6%.The ‘t’ test was applied to test the null hypothesis that there are no significant differences between the means score of dimensions of Butterfly Conservation Awareness of the sub groups of the students with respect to Age group. The findings revealed that: This test will be used to analysis of the butterfly conservation awareness status on among rural and urban school students in respect to age wise details, they are significance differences between the students of age group 11yrs, 12yrs, and 13yrs. butterfly conservation awareness at 5% level of significance. Based on the mean scores, consolidated statement is the male students is obtaining from the high level of awareness is 17-20%..The awareness of conservation of butterflies is at 5% level of significance. The female students are 8.6% more aware than the male students. Based on all the mean scores 17-20% of awareness has been created among the students.

#### **9) Title of the Project :Real Time Application Of Fibonacci Series Using Maple**

**Name of the Mentor** Dr. M. Mohamed Jabarulla

|                 |            |
|-----------------|------------|
| Navayugan C     | (19UMA045) |
| Sankaralingam B | (19UMA052) |
| Sathish Kumar M | 19UMA054)  |
| Vasanth R       | (19UMA060) |
| Vasudevan A     | (19UMA061) |

**Abstract:** The discoveries of LEONARD OF PISA, better known as FIBONACCI, are revolutionary contributions to the mathematical world. The numbers from the sequence are manifested throughout nature in the form and designs of many plants and animals and have also been reproduced in various manners in art and music. Fibonacci sequence of numbers and the associated “Golden Ratio” are manifested in nature and in certain works of art. We observe that many of the natural things follow the Fibonacci sequence. It appears in biological settings such as branching in trees, snail shell, etc. At present Fibonacci series plays important role in many things. In that Fibonacci plays major role in Trading. 1,2,3,5,8,13,21,34,55,89,144,233,377..... . This string of numbers is known as the Fibonacci sequence and each successive term is found by adding the two preceding terms together. Fibonacci numbers are used throughout society. It is astonishing how these sets of never ending numbers are used in various ways.

**10) Title of the Project** A Statistical analysis of online shopping versus offline shopping during Covid-19 using R

**Name of the Mentor:** Dr. R. Jahir Hussain

Mr.S. John Benadict (19UMA020)

Mr.S. Kalaiselvan (19UMA022)

Mr.P. Manoj Kumar (19UMA025)

Mr.J. Mohammed Harris (19UMA033)

Mr.J. Syed Mohammed (19UMA056)

**Abstract:** This project focuses on statistical analysis of online shopping versus offline shopping and the significant difference between the online and offline consumer groups in terms of demographic, use of technology, availability of the product and attitude of the consumer. The project brought out the result that the respondents have found the mode of online shopping is convenient for them. However the frequency of online shopping is relatively less in the country. The results of the study also throw light on how to revamp the strategies to promote offline shopping among the consumers. The Fibonacci sequence is significant because of the so called golden ratio of 1.618 or its inverse 0.618. The Fibonacci sequence can also be seen in the way tree branches form or split. A main trunk will grow until it produces a branch, which creates two growth points. Then, one of the new stems branches into two, while the other one lies dormant. This pattern of branching is repeated for each of the stems. Not only in nature Fibonacci plays major role in trading. We can Predict Trading Graph Using Fibonacci.

**11) Title of the Project** Application of Trigonometry in Real Life

**Name of the Mentor** Dr. P. Muruganatham

Submitted by

Balaji R (19UMA007)

Imran A (19UMA017)

Mohamed Abbas M (19UMA027)

Naveen Kumar S (19UMA046)

Rashik Ahamed S (19UMA050)

**Abstract:** Trigonometry is the branch of mathematics concerned with specific functions of angles and their application to calculations. There are six functions of an angle commonly used in Trigonometry. Their names and abbreviations are sine (sin), cosine (cos), tangent (tan), Cotangent (cot), secant (sec), and cosecant (csc). Trigonometry is used in our day to day life. Trigonometry is applied in Marine Biology, Criminology, Game development etc. In our project we figured out

that trigonometry place a vital role in our day to day life. Trigonometry plays a major role in construction, navigation, game development and many areas. We can conclude that without trigonometry, life would be much more difficult. Without going through the troubles, you can easily find something so we think that it was a good invention by Archimedes and thanks to this many architects need not go through the trouble to calculate things, so it really helps in real life applications and not only in our tests and exams.

## Department of Physics

**1) Title of the Project :** Determination of molar refraction and confirmation of structure of certain liquids

**Name of the Mentor :** Dr. A. Ishaq Ahamed

Abbas Ali K (19UPH001)

Abdul Malik J (19UPH003)

Abimanyu M (19UPH004)

**Abstract:** It is a known fact that light travels with different velocities in different media. For example, the velocity of light is different in the condensed phase of matter (solids, liquids) when compared to gaseous phase. This variation of velocities is quantified by the refractive index. It is defined as the ratio of the velocity of light in vacuum to the velocity of light in the medium. The experimental determination of the refractive indices of different media has therefore led to the birth of the field of the refractometry. The refractive index is a useful physical property of liquids. For example, the purity of a liquid sample, its density, concentration etc. can be determined from an experimental measurement of its refractive index. Even in the case of solids this idea can be extended. This can be done by dissolving a solid in a suitable solvent and measuring the refractive index of the solution. The refractive index of the solute and hence its molar refraction can be then by obtained. The molar refraction is the product of the molar mass of the liquid and its specific refraction. It has been found that the molar refraction increases in regular increments with the numbers of carbon atoms within a homologous series. This finding has led to the notion that the molar refraction of the compound can be considered to be the sum of the atomic increments. Further within certain limits, the atomic contribution to the molar refraction is found to be the same in every molecule. Hence obtaining the molar refraction of the sample experimentally, and comparing it with the theoretically calculated values, an idea of the bond linkages and hence the structure of the sample can be had. In the project, we intend to measure the refractive indices of certain compounds and hence their molar refraction values. Then by calculating these using theoretical formulas, we intend to determine their structure.

**2) Title of the Project** Basic concept of solar energy – Solar Power Bank

**Name of the Mentor** Dr. N. Peer Mohamed Sathik

Abrar Ahamed A (19UPH005)

Aburar M (19UPH006)

Afrith Ahamed S (19UPH007)

**Abstract:** The objective of this project is to study a Solar Powered Portable Power Bank for mobile phone using sunlight as its ultimate power, which can be used effectively during disaster events. It has in-built solar panel which converts the solar energy to electrical energy. The charge is then

transferred to a battery for storage of charge for further use, with the battery having a microcontroller indicating the percent of charge present in the battery. The battery is connected to a charging circuit having an USB port as output to the respective Mobile phones.

**3) Title of the Project** Design and development of home appliances -an overview of hybrid solar cooker

**Name of the Mentor:** Dr. R. Radhakrishnan

Ajmal Khan M (19UPH008)

Apsar Ali M F (19UPH009)

Arunkumar R (19UPH010)

**Abstract:** The number of solar cookers like solar panel cooker, solar parabolic cooker, solar box type cooker and hybrid solar cooker etc. have been designed and developed by the scientists and researchers all over the world but still the utilization of solar cooker is not sufficient. But the development of a photovoltaic and thermal hybrid solar cooker has started a new horizon in the field of solar cookers as the cooking is faster than conventional box type solar cooker and can be used at users convenient time. In this project we want to review a hybrid cooker where the solar energy is transferred to the kitchen and supplements the conventional cooking source LPG and suggest possible ways to improve it.

**4) Title of the Project :** Determination of refractive index of different liquids using hollow prism

**Name of the Mentor** Capt. F.S. Muzammil

Ashwaak B (19UPH011)

Askar Ali A (19UPH012)

Azarudeen N (19UPH013)

**Abstract:** A simple reliable and common method of measuring refractive index of liquid is by the measurement of angle of minimum deviation produced by a light beam that passes through the liquid contained in a hollow prism made of transparent glass. In this work, we gone through some experimental efforts to get the refractive indices of certain transparent liquids like, water, benzaldehyde, dilute sulfuric acid and kerosene. The result is verified with Abbe refractometer which suits best for assessment refractive index of transparent liquids.

**5) Title of the Project :** Analysis of the Role of Molar Mass, Molecular Polarizability and Refractive Index “n” for some Amines and Ether groups

**Name of the Mentor** Dr. R. Raj Muhamed

Dhilip G (19UPH014)

Dinesh Kumar P (19UPH015)

Gokul V (19UPH016)

Harikrishna S (19UPH017)

**Abstract:** The refractive indices of solvent mixture and solutions were measured by Abbe’s refractometer. For evaluating the molar refraction and polarizability constant of the compounds, pure chemicals amines (n butylamine, N-propylamine, di-n propylamine, di-isopropylamine, N-amylamine) ethers (Anisole, Tetra Hydro Furan (THF), 1,4 dioxane, di phenylether). The temperature was maintained by using the thermostat. The data obtained was used to compute intermolecular interactions. The substituted bis schiff bases ligands used for the study were synthesized by standard method.

**6) Title of the Project:** Determination of dielectric constant for certain liquids

**Name of the Mentor** Mr. J. Umar Malick

Harishraj V (19UPH018)

Irsath Ahamed J (19UPH019)

Kingson Shyam M (19UPH020)

Marimuthu M (19UPH021)

**Abstract:** A liquid dielectric is a dielectric material in liquid state. Its main purpose is to prevent or rapidly quench electric discharges. Dielectric liquids are used as electrical insulators in high voltage applications, e.g. transformer, capacitors, high voltage cable and switchgear. Its function is to provide electrical insulation, suppress corona and arcing and to serve as a coolant. A good liquid dielectric should have high dielectric strength, high thermal stability and inertness against the construction materials used, non-flammability and low toxicity, good transformer properties and low cost. In this project work, four dielectric liquids namely Benzene, Toluene Cyclohexane and n-Hexane have been chosen.

**7) Title of the Project :** A comprehensive review on Solar Cookers

**Name of the Mentor:** Dr. J. Ebenezar

Mohamad Arshath S (19UPH022)

Mohamed Akram A (19UPH023)

Mohamed Mushraf (19UPH024)

Mohamed Naveeth K (19UPH025)

**Abstract:** The continuous increase in the level of greenhouse gas emissions and the increase in fuel prices are the main driving forces behind efforts to more effectively utilize various sources of renewable energy. In many parts of the world, direct solar radiation is considered to be one of the most prospective sources of energy. among the different energy end-users, energy for cooking is one of the basic and dominantly used in developing countries. energy requirement for cooking accounts for 36% of total primary energy consumption in India. Hence, there is a critical need for the development of an alternative, appropriate, affordable mode of cooking for use in developing countries. in this project, a comprehensive review of solar cookers is presented. it also covers a historic overview of solar cooking technology, detailed description of various types of solar cookers. The working principle of solar cooker is that light energy from sun is onto a receiving surface such as a cooking pot or pan. the light energy interacts with the receiver material and transfer to heat energy by the conduction process and cooking food. he environmental impacts and future potential of solar cookers are also discussed.

**8) Title of the Project:** Solar Electric Power Generation

**Name of the mentor:** Dr. A. Abbas Manthiri

Mohamed Sabeek J (19UPH026)

Mohamed Zaid S (19UPH027)

Mohamed Halith A (19UPH028)

Mujipur Rahuman (19UPH030)

**Abstract:** The solar energy is produced by the sunlight is a non-vanishing renewable source of energy which is free from ecofriendly. Every hour enough sunlight energy reaches the earth to meet the world's energy demand for a whole year. In today's generation we needed electricity every hour. This solar energy is generated by as per applications like industrial, commercial, and residential. It cans easily energy drawn from direct sunlight. So it is very efficiency & free environment pollution for surrounding. In this project, we have reviewed about the solar energy from sunlight and discussed about their future trends and aspects.



**9) Title of the Project:** Variation Of Dielectric Constant With Frequency For Pure And Doped Triglycine Sulphate Crystals

**Name of the mentor:** Dr. A.S. Haja Hameed

Nasruthen Sha K (19UPH031)

Nowfal Imran N (19UPH032)

Pavitthiran M (19UPH033)

Ragavendran I (19UPH034)

**Abstract:** Triglycine sulphate (TGS) crystals have very important applications in infrared detectors and pyro-electric detectors. Linear and two-dimensional arrays of TGS material have been used in IR devices. TGS single crystals show a typical second order phase transition at Curie temperature of 49 °C. It belongs to the monoclinic system, both in the ferroelectric and para-electric phases. Below  $T_c$ , it belongs to the polar point group 2 with the spontaneous polarization along the b-axis. In the para-electric phase, the crystal belongs to the centro-symmetric point group 2/m. However, TGS crystal has a disadvantage of depolarization as time elapsed. Many researchers have tried to tailor the properties of TGS to meet the practical device fabrication requirements. The depolarization effect can be reduced by doping the crystal with optically active molecules. It has been observed that the action of dopants is used in order to overcome the depolarization effect. Therefore, the studies dealing with the influence of doping with TGS crystals on their physical properties are of particular interest. In the present study, Triglycine sulphate (TGS), chloroacetamide (AC) and 4-dimethylaminobenzaldehyde (DB) doped TGS crystals were successfully synthesized and grown from their respective aqueous solutions by slow evaporation method. X-ray powder diffraction patterns were collected for pure, AC and DB doped TGS crystals in order to determine their lattice parameter values. Fourier Transform Infra-Red (FTIR) spectroscopic analysis was carried out to confirm the molecular vibrations of TGSP and the presence of AC and DB in TGS qualitatively. The dielectric studies showed the variation of dielectric constant as a function of frequency at room temperature.

**10) Title of the Project :** Influence of the Angle of a hollow prism to the accuracy of the Refractive index measurement of various liquids

**Name of the Mentor** Dr. S. Abbas Manthiri

Rajamuhamadhu S (19UPH035)

Sanjive S (19UPH036)

Santhoshkumar N (19UPH037)

Satheesh K E (19UPH038)

**Abstract:** The influence of the apex angle of a hollow prism used as a simple refractometer to the accuracy of a refractive index measurement of the liquid samples (Water, Benzene, Acetone and Carbon tetrachloride) was studied. The hollow prism was made from an ordinary commercial glass plate with a thickness of 2 mm. The apex angle of the constructed hollow prism was varied. For measuring the refractive index, the liquid sample was filled in the constructed hollow prism, and then a monochromatic beam was passed through the liquid sample at a certain angle of incidence. The angle of minimum deviation of the transmitted monochromatic beam was measured and then used for calculating the refractive index of the liquid sample. The refractive index measurement was made using the hollow prism with different apex angles, ranging from  $30^\circ$  to  $60^\circ$ . The measurement accuracy was estimated by comparing the refractive index measured using the hollow prisms to that of obtained using a standard Abbe refractometer. It was found that the refractive index of the liquid sample can be measured accurately by using the hollow prism. It was also found that the accuracy of the refractive index measurement significantly changes with the apex angle of the hollow prism.

**11) Title of the Project :** A Study on ultrasonic Pest Repeller

**Name of the Mentor :** Dr. S. Shek Dhavud

Sathishkumar S (19UPH039)

Selvamani P (19UPH041)

Sathiyavel P (19UPH040)

Shaul Hameed M K (19UPH042)

**Abstract:** So many remarkable things are happening in the world of Science and Technology but yet there is no effective solution to repel pests electronically. This review paper focus on the various pest controlling methods and also talks about the ultrasonic pest controller based on frequency generation technique. The various pesticides, herbicides and other repellent are toxic and are risk for human health. Ultrasonic Pest Repeller (UPR) is an emerging technology which is

cheap, eco-friendly and effective and produces no risk at all to human. Ultrasonic Pest Repeller is an electronic device that is capable of generating sound of ultrasonic frequency range, not audible to human ear but to pests like rodents, birds, insects etc. Because of the sound of this frequency (10-100 kHz) pests feel unpleasant and due to intense auditory stress they move away from the device. The device can be utilized by general public to repel mosquito, farmers to repel rodents, insects and other pests.

**12) Title of the Project:** Design and development of Solar Still

**Name of the Mentor:** Mr. S. Mohamed Sulaiman Sait

Subash D (19UPH043)

Sudharsanarajan C (19UPH044)

Suriya N (19UPH045)

Syed Kasim S I (19UPH046)

**Abstract:** Direct sunlight has been utilized long back for desalination of water. The desalination process takes place in solar still. Solar still is a device that converts saline water to potable water. Solar still is widely used in solar desalination processes. But the productivity of the solar still is very low. To enhance the productivity of the single basin solar still many research works is being carried out up till now. For a high-efficiency solar still one should have high solar radiation, high air temperature, low wind velocity, and a small condenser surface. This process requires seawater and sunlight which are widely available on Earth. However, the current solar still generation capacity is generally low and has high installation cost. Hence, there is a need for the enhancement of the productivity which can be achieved through few modifications. In this project, a comprehensive review of solar still technologies that have been focused.

**13) Title of the Project :** Modeling of Solar Cells

**Name of the Mentor:** Dr. C. Hariharan

Usman Ahamed U (19UPH047)

Vinoth S (19UPH048)

Wasim Akram S (19UPH049)

Yokesh A (19UPH050)

**Abstract:** The PV module is the interface which converts light into electricity. Modeling this device necessarily requires taking weather data (irradiance and temperature) as input variables. The output can be current, voltage, power or other. However, trace the characteristics I (V) or P (V) needs of these three variables. Any change in the entries immediately implies changes in outputs. That is why, it is important to use an accurate model for the PV module. This paper presents a detailed modeling of the effect of irradiance and temperature on the parameters of the

PV module. The chosen model is the single diode model with both series and parallel resistors for greater accuracy.

## Department of Zoology

**1) Title of the Project :** Studies on The Ground Water Quality of Hanifa Colony, N.M.K Colony, Race Course Road, TVS Tolgate area Tiruchirappalli, TN

**Name of the Mentor : Dr. Hussain Syed Bava**

Fazlur Rahman A (19UZO008)

Chandru S (19UZO007)

Inamul Hasan F (19UZO010)

Jeeva T (19UZO011)

**Abstract:** Ground water is an important source of water for drinking agriculture and other household purposes, but high population growth industrialization and lack of oversight environmental policies and implementation have not only degraded the quality but also stressed the quantity of this previous source of water. Many optimists existed but this study evaluated the quality of groundwater used for potable consumption with a simple approach in an urban area (Race course road, Hanifa colony, NMK colony). The study sought to determine the main control of groundwater chemistry and its suitability for drinking and domestic purposes in the above area. Ground water is a valuable and widely disposed resource of the earth this most valuable resource is sometimes inadequate due to improper use of surface and ground water aquifers bore water sample have been collected and estimated different chemical parameters like calcium silicate, Hardness, dissolved, oxygen, chloride, phosphate, nitrate, and pH. Pollution of groundwater resources is one of the major challenges faced by rapidly developing countries like India.

**2) Title of the Project** Influence of different types of feeds on the growth performance of *Carassius auratus* (Gold Fish)

**Name of the Mentor : : Dr. K. Prabakar**

Mr. M.Mohamad Uvais (19UZO015 )

Mr. S.Mohamed Afzal (19UZO016 )

Mr. K.S.Mohamed Akthar (19UZO017)

**Abstract:** This investigation aimed to Analyse the influence of different feeds and determine the optimal feed on the growth performance of Goldfish. In the present study goldfishes were procured

from commercial fish breeders kolathur, Chennai and fed with 4 experimental diets namely Diet 1 (control pellet feed), Diet 2 (formulated feed), Diet 3 (Dry Tubifex) and Diet 4 (Glycera) to examine the effects on growth and survival rates. In the experiment, 12 glass circular tanks with the volume of 10 liter were used and 10 goldfishes having an average body weight and length of 0.01 gram and 0.8 Centimeter were randomly introduced into each aquarium. During the experimental study the fish were fed 2 times a day for 30 days the various growth parameters and proximate composition of the diets were calculated by following standard methods. The findings showed Significant differences in the fish various growth parameters fed with different feeds. The fish fed with diet 4 crude protein (59.13%) performed better than those provided with lower levels. The increase in growth parameters could be attributed to increase the levels of dietary crude protein. However, the diet does not have any significant impact on fish survival rates. Thus, it is concluded that the live feed Glycera with 59.13% is crude protein is suitable for the optimal growth of *Carassius auratus* under the current experimental setup and recommend for the feeding goldfish.

**3) Title of the Project:** Digitalization of Zoological Specimens available at Jamal Mohamed College Museum

**Name of the Mentor:** Dr. H.E Syed Mohamed

A. Abuthahir (19UZO002 )

S. Mohamed Salman Arsath ( 19UZO019 )

A. Mohamed Subair (19UZO020)

**Abstract:** The Zoological Museum of our college is a structure of high potential for development due to a rich collection of representatives of the animal world and traditions of participation in research on an all scale. This potential is not fully realized due to both changes in departmental affiliation and difficulties associated with replenishing the collections performed by conventional methods. The paper proposes a development concept based on modern concepts of museum destination in terms of participation culture. The formation of an advanced mobile and polyphonic exhibition space will promote its attractiveness and increase the information content of the museum. Digital technologies, including augmented and virtual reality technologies, will be used to replenish collections. A live collection of fish from local waters will enhance the research and social capabilities of the museum as a place for the communication of like-minded people. Information support in the media, social networks, and museum websites is a reserve for attracting and highlighting active users. However, the main approach implies the competent methodological and active promotion of the complex educational services in accordance with the consumer requirements. Scaling the project activities of university students allows its use as a source for concept implementation. Museum specimens form the basis for research on evolution, speciation, and distribution, and also provide an important baseline for studies of conservation and emerging diseases (e.g., hantavirus, West Nile Virus, chytridiomycosis, to name a few). Specimens and their

associated data (e.g., field notes of habitat, recordings of song, reproductive and age information, etc.) also provide information on the natural and life history traits of animal.

**4) Title of the Project :** Assessment of Milk adulteration In Tiruchirappalli City

**Name of the Mentor :** Dr. M. Meeramaideen

Abdul Rasak Alaudeen.S (19UZO001 )

Mohamed Rizwan. Z (19UZO018 )

Zakeer Hussain. A (19UZO037)

**Abstract:** All the milk samples analysed shows one or two adulterant both January and February, 2022. Sample A shows only acidity and heat stability and free from other adulterants. The remaining samples show the detergents and mastitis. Detergents may be due to improper washing of vessels during the transmission results. Mastitis is due to improper maintenance of hygiene, due to this bacterium such as staphylococcus aureus, cause mastitis. The mastitis may transfer from one cattle to another by milking, mechine. According to FSSI least adulteration recorded in Tamilnadu and Pondicherry, in Tamilnadu the contamination due to lack of awareness. In Tamilnadu we could reduce these contaminants by making awareness.

**5) Title of the Project:** Screening Of In Vitro Antioxidant Potential and Biochemical Characterization Of *Calotropis Gigantea* Through FTIR Spectral Analysis

**Name of the Mentor :** Dr. S. Mohamed Hussain

K. Mohamed Alrashid (19UZO 022)

A. Mohammed Ali (19UZO 023)

S. Mohammedafsal (19UZO 025)

**Abstract:** In the present study, methanolic extract of *Calotropis gigantea* leaf is subjected for FTIR analysis for the detection of various functional groups present. The FTIR spectrum obtained confirmed the presence of certain functional groups. The sample was also subjected to Total antioxidant activity, In vitro free radical scavenging assay, DPPH assay, Ion chelating assay for different concentration also gave promising results. *C. gigantea* showed consistent antioxidant activity with increased concentration whereas ascorbic acid and BHA were used as standard.

**6) Title of the Project :** Study on diversity and distribution of Soil Mites (Acari:Oribatidae)in Jamal Mohamed College, Tiruchirappalli

**Name of the Mentor :** Dr. M. Salahudeen

Mugesh. A (19UZO026 )

Muhammed Rafi. T (19UZO027 )

Musthafa Kamal. M (19UZO028)

**Abstract:** Acarology, the scientific study of mites and ticks has born and prospered through the advances in microscopy. Even more important to the birth of this new science was the industry and imagination of the Acarologists in the late 1800s. Now, Acarology has become one of the fastest growing disciplines of Zoology. An elaborate study of this branch of science has helped the scientific community to know more about the impact of mites and ticks on man and his environment. In the present study we focused on Oribatid mite diversity in the Jamal Mohamed College campus. More number of species were recorded in Garden (7) due to less human activities and soil quality. Mark Maraun et al. (2003) reported that disturbances such as mixing of litter and soil and combination of litter material strongly affect the density and diversity of soil microarthropods. In the development of an effective conservation program for effective natural habitat, one of the first steps is the compilation of an inventory of the most important forest and wetland sites. However, measures are taken to stop student entry into garden areas and damaging the plantations. Zoology department and English sites have high amount of plantation and humid conditions are maintained. Hence soil mite species richness is noted in these sites. As per the results obtained from the project various lectures and awareness programs were conducted by me targeting college students.

**7) Title of the Project** Terrestrial Gamma and Gross alpha radioactivity level in Ariyalur, Tamil Nadu, India

**Name of the Mentor :** Dr. R. Krishnamoorthy

Gunal.R (19UZO029)

Omprakash.A (19UZO030)

Sathish.G (19UZO031)

Sugavanan.S (19UZO032)

**Abstract:** Exposure to ionizing radiation in the outdoor environment is due to the terrestrial and extraterrestrial sources of radiation. Terrestrial radiation comes from the radionuclides present in the earth's crust (primordial radionuclides), soil, rocks, water and air. Primary radionuclides predominantly found in rock and soil are  $^{238}\text{U}$ ,  $^{232}\text{Th}$  and  $^{40}\text{K}$ . It is reported that contribution of radon is not significant for outdoor radiation. Excluding cosmic radiations from extraterrestrial sources, major radiation along the river bank comes from the nearby rocks at

higher altitudes, river sediment and water whereas in plain areas the key radiation sources are soil, sediment and water. The levels of radioactive nuclides in rock and soil vary with the geological locations. Therefore, it is important to measure the dose rates at different geological areas. The terrestrial gamma radiation and gross-radioactivity concentration were investigated in various sampling stations Ariyalur. Terrestrial *gamma* radiation exposure doses (excluding cosmic radiation) were measured using a Plastic Scintillation Counter, a rugged, light weight and portable instrument designed for radiometric, geophysical and environmental reconnaissance survey was used to measure terrestrial gamma radiation level. The terrestrial gamma level was found to be minimum 4.33  $\mu\text{R/h}$  in Valajanagaram and maximum 13.33 $\mu\text{R/h}$  in Fossil Museum, Ariyalur. The gross alpha radioactivity of buildings material was performed using Radiation Counting System (Nucleonix- RC 605A). The gross-alpha activity concentrations ranged from 8.50 Bq/kg in Karuppur to 55.00 Bq/kg in Siruvallur respectively.

**8) Title of the Project:** A baseline study to detect the presence of microplastics in *Oreochromis Mossambicus* (Tilapia Fish) of selected water bodies in Tamil Nadu

**Name of the Mentor:** Mr. P.A. Ashique  
G.Vengatesh (19UZO036)  
Abdus Shafiq.N (19UZO038)  
Sivaraman.A(19UZO039)

**Abstract:** Plastics pollution is ubiquitous. Microplastics (< 5 mm in diameter) and mesoplastics (5– 20 mm in diameter) are emerging as the most common plastic contaminants of concern worldwide. In this study, the occurrence of microplastics and mesoplastics in the gastrointestinal tract (GI) of Tilapia fish (*Oreochromis mossambicus*) collected from Arugan dam of Tiruchirappalli district, Mugaiyur Pond of Villupuram district and Karunguli pond of Kallakurichi district were examined. A new and improved alkaline digestion method, using alcoholic potassium hydroxide (KOH) was carried out to destroy the organic matter. Following this method, 6 plastic particulates were isolated from the GI tract of 5 fishes. By analyzing its morphological characters they were found to be fibers , beads and fragments of plastic. India is one of the biggest market of fishes and known for popular delicacy, the presence of microplastics in the fish gut is a potential serious human health concern.