VIVEKANANDA COLLEGE

(Residential & Autonomous – A Gurukula Institute of Life – Training)
College with Potential for Excellence
Re-accredited with "A" Grade (CGPA 3.59 out of 4.00) by NAAC
Affiliated to Madurai Kamaraj University, Managed by Sri Ramakrishna Tapovanam, Tirupparaitturai, Trichy

Tiruvedakam West, Madurai District-625 234, Tamil Nadu

DBT STAR COLLEGE SCHEME
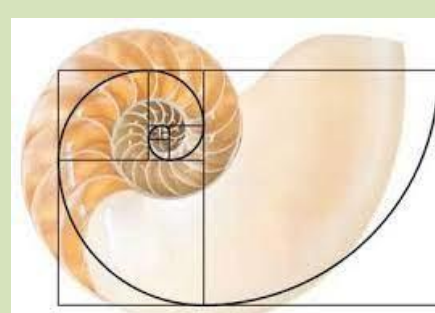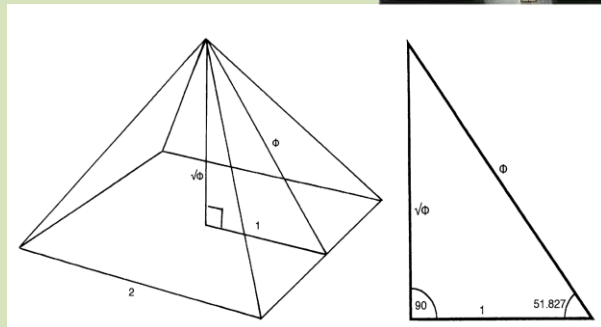
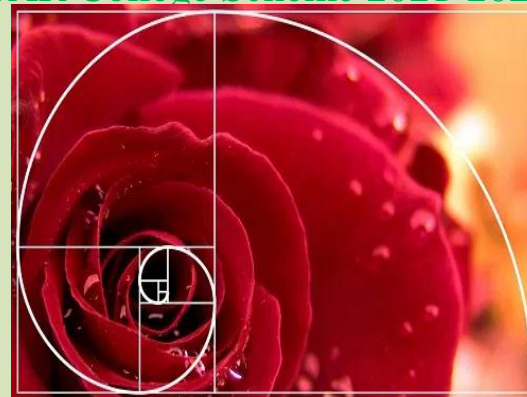**Department of Biotechnology, Government of India, New Delhi**

Chairman & Principal	:	**Dr. T. Venkatesan, M.Com., B.Ed., M. Phil., PGDCA., Ph.D**
Coordinator & Member Secretary	:	**Dr. G. Ponraj, M.Sc., M. Phil., Ph.D**

DEPARTMENT OF MATHEMATICS

DBT STAR College Scheme 2021-2022
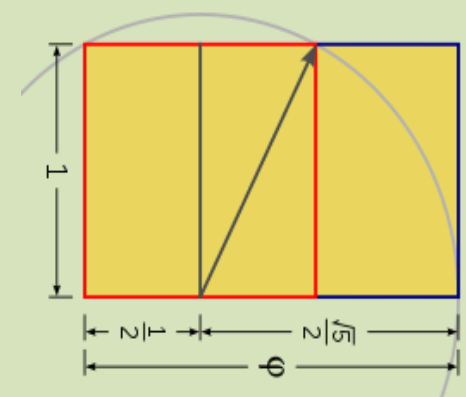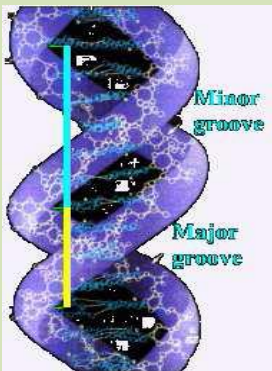
Sl.No	Name of the Mentors	Title of the Projects	Outcome	No. of Beneficiary	Page No.
1	Dr. C. Rajan	Inventory Control In Business Sector" At Mahindra Cie Automotive Ltd	Buying the optimal quantity can result only from a sound inventory control system that is achieved by judicious reconciliation of conflicting costs and departmental objectives. However, inventory is only indicator of performance of materials management principles but also models along with it also take long term measures to reduce inventories through strategies such as variety reduction and standardization, source development and optimization and vendor rating lead-time reduction through improvement in the systems and procedures of procurement. It is obvious that scientific inventory management has to be practiced selectively rather than indiscriminately to make it cost- effective. It is also important to have Informational inputs like demand forecast, lead time estimate and other cost estimates to be realistic to make effective use of inventory	3	10

			models.		
2	**Dr. C. Rajan**	A Study On Inventory Management At Asian Paint's	Stock Management helps and guarantees the accomplishment of creation organizations. Fruitful execution of stock fundamentally improves the entire business. Current stock administration forms use new and increasingly refined strategies for dynamic enhancement of stock to limit shopper administrations, diminished stock and ease. The objective of good stock administration isn't flawlessness however improvement. These enhancements ought not be seen as a transient exertion, yet should proceed consistently. The ROI of stock administration is found in expanded pay and benefit shapes, a positive increment in the representative condition and in general consumer loyalty.	4	11
3	**Dr. C. Rajan**	Inventory Management Technique At Soaps And Dragnet Ltd	In KSDL rate of inventory represents a very significant proportion of current assets, the Size of the inventory is increasing year after which indicates inefficient inventory management in	4	12

			KS&DL. Necessary steps have to be taken by management. They have to adopt the new techniques and new methods of production process in order to increase Production of the company.		
4	**Mr.M.Nagaraj**	Application of Graph Theory In Network Analysis	The graph of a network plays a fundamental role in the study of circuits. Till now we have been focusing on providing graph theoretical approach to an electrical network. Graph theory has greater application in wide range of fields.	4	13
5	**Mr.M.Nagaraj**	Graph Theory In The Field of Computer Network Security	Scenario graph and Attack graphs have been a subject of study by security researchers for several years, and they served as the original motivation for our work on scenario graphs. Based on the inquiries received in the course of our work, we believe that the attack graph application will continue to generate interest in the future. However, the field is wide open for more applications of scenario graphs. We believe that other kinds of systems can benefit from comprehensive modelling of faulty	4	14

			behaviour and hope to see more research in this area in the near future.		
6	**Mr.M.Nagaraj**	Network Analysis Through Graph Theory	In addition, such a graph-theoretic presentation enabled Kirchhoff to formulate for a network with a finite number of linear resistors some short hand methods of writing by inspection the current in any of the resistors knowing the voltage excitations located anywhere in the network. With these previously done studies we can notice number of applications in field of networking synthesis and analysis.	3	15
7	**Mr.C.Velmurugan**	A Study On Real-Life Applications Of Dynamical Systems	In this article, we discuss some Applications of Dynamical Systems in Real Life considering some popular fields like Mathematics, Statistics, Medical, Biological Sciences, Engineering, Economics etc. we mainly focus to determine some applications of dynamical system in real life cases such as Iteration, Chaos, Mandelbrot & Julia sets and Fractals. We	4	15

			show their real-life applications both theoretically and analytically considering sophenomenon from the nature. We analyse the results of some cases by making suitable program using MATHEMATICA and MATLAB programming.		
8	Mr.C.Velmurugan	A Study On Activity Dependence Of Solar Supergranular Fractal Dimension	We studied the complexity of supergranular cells using the intensity patterns obtained at the Kodaikanal Solar Observatory during the solar maximum. Our data consist of visually identified supergranular cells, from which a fractal dimension D for supergranulation is obtained according to the relation $P \propto A^{D/2}$, where A is the area and P the perimeter of the supergranular cells. We find a fractal dimension of about 1.12 for active region cells and about 1.25 for quiet region cells, a difference that could be attributed to the inhibiting effect of the magnetic field.	3	17
9	Mr.C.Velmurugan	A Study On Fractal Applications In Brain	The function of the cancer cell is depicted in this paper as a complicated network.	4	18

		Tumor	The growth rate of cancer cells is calculated and depicted graphically by Natural Logarithm. The potential energy proves that the transmission of cancer cell develops an independent path that grows rapidly. The cancer cell is portrayed as a spanning tree and is formed into an acyclic network, according to Minimal spanning tree, which causes the disease to the weakest cell, has no loop and spreads aggressively. The area and shape of the impacted region are calculated using percolation.		
10	Dr R. Kalaivanan	Golden Ratio In Logo Designing	The golden ratio can be found throughout life and the universe. The appearance of Phi creates a sense of balance, harmony and beauty in the design of nature and manmade master pieces. Further undoubtedly this mathematical law quantitatively defines stability, synchronization and gorgeousness. Hence to understanding of this ratio is an essential prerequisite for achieving aesthetically pleasing results in our	3	19

			designs technology.		
11	**Dr R. Kalaivanan**	Golden Ratio In Human Anatomy	While some may dispute the significance of the Golden Ratio, it is apparent that through our history there has been a fascination with it. Many will speculate on the validity of it in nature, as well as in our history. It's important to realize that, while although some of these examples mentioned are in fact not quite perfect to Golden Ratio, there still is a significance to the approximate value. We have come to conclude that it is not the "holy grail" of numbers, but merely a great measurement to start from. There happens to be an uncanny appeal to the aesthetics of this ratio and we intend to keep using it in my works. If you are looking for an improvement in your own aesthetics, Golden Ratio will be a great resource.	4	20
12	**Dr R. Kalaivanan**	**Golden Ratio In Nature And Architecture**	Using Fibonacci numbers, the Golden Ratio becomes a golden spiral, that plays an enigmatic role everywhere in the nature such as in shells, pine cones, the arrangement of seeds in a sunflower head	4	21

			and even galaxies. Adolf Zeising, a mathematician and philosopher, while studying the natural world, saw that the Golden Ratio is operating as a universal law. On the other hand, some scholars deny that the Greeks had any aesthetic association with golden ratio.		

GROUP I

TITLE OF PROJECT: A STUDY ON INVENTORY MANAGEMENT AT ASIAN PAINT'S

NAME OF THE MENTOR: Dr. C. Rajan

STUDENT NAME: P. Arjun Pandi   (Reg No: 190501)

M. Arun Kumar   (Reg No: 190502)

M. Balaguru (Reg No: 190503)

ABSTRACT: Inventory control, also known as stock control, refers to the process of managing a company's warehouse inventory levels. The inventory control process involes managing items from the moment they're ordered; throughout their storage, movement, and usage; and to their final destination or disposal. This project about Mahindra CIE Auto. Ltd. It started on the year 1984. This company have a Vision, Mission And Core values. Research Methodology of the company is " To study the Inventory Management Techniques, the procedure of the implementation of ABC Analysis and the different types of inventory control techniques. We analyze the data by ABC method (Always Better Control). Today's market is a customer-oriented market and customer satisfaction is the most important goal of every organization therefore it is inevitable to adopt integrated inventory management approach for new product development strategy. Financial – new material management for any product is a decision making process involving a series of inter-related activities.

KEYWORDS: ABC Method, Inventory Management, Mahindra CIE Auto

GROUP II

TITLE OF PROJECT: A STUDY ON INVENTORY MANAGEMENT AT ASIAN PAINT'S

NAME OF THE MENTOR: Dr. C. Rajan

STUDENT NAME: M. Bharath Sankar (Reg No: 190505)

P. Chandru (Reg No: 190506)

N. Balamurugan (Reg No: 190504)

P. Chinnamani (Reg No: 190507)

ABSTRACT: Asian Paints Limited is an Indian synthetic substances organization which fabricates a wide scope of paints for brightening and mechanical use. Its vision is "to wind up one of the best five enhancing coatings organizations worldwide by utilizing its skill in the higher development developing markets. All the while, the organization means to manufacture long haul an incentive in the modern coatings business through collusions with built up worldwide accomplices. Asian Paints is Asia's third biggest paint organization, with a turnover of Rs 109.70 billion. Other than Asian Paints, the gathering works far and wide through its auxiliaries Berger International Limited, Apco Coatings, SCIB Paints and Taubmans. Organization utilizes crude materials like Pigments, Extenders and Minerals. Unlike most other industry, the paint business was moderately free of guidelines. Anyway for quite a while it was seen to be an extravagance thing and was liable to abnormal amounts of offers and extract charges. The high extract obligation routine combined with moderately ease.

KEYWORDS: HLL and Nirma, GODREJ, Asian Paints

GROUP III

TITLE OF PROJECT: INVENTORY MANAGEMENT TECHNIQUE AT SOAPS AND DRAGNET LTD

NAME OF THE MENTOR: Dr. C. Rajan

STUDENT NAME: S.Dheenadharshan (Reg No: 190508)
M.Dhivakaran (Reg No: 190509)
A.Dinesh Kumar (Reg No: 190510)
T.Gopal (Reg No: 190511)

ABSTRACT: The project involves the manufacturing inventory management procedure. It includes a simple advent to inventory management, agency profiles, industry profile, product profile, visions, missions and "Karnataka Soaps and Detergents Limited" (KSDL) regulations. It also explains the employer's destiny boom and prospectus. There are some sorts, technology and objectives of inventory management to explain. The literature evaluation discussed the employer's inventory guidelines and manipulate measures in detail. The equipment used in this model are ratio analysis and interpretation. Use time collection analysis to observe the efficiency of stock management. The project additionally proposed a future movement plan for the organization to enhance inventory. In order to analyse a study on inventory management in Karnataka Soaps and Detergent limited, five years financial data has been measured.

KEYWORDS: KSDL, Inventory Management, Mysore sandal soaps.

GROUP IV

TITLE OF PROJECT: APPLICATION OF GRAPH THEORY IN NETWORK ANALYSIS

NAME OF THE MENTOR: M. Nagaraj

STUDENT NAME: M. Guna (Reg No: 190512)

J. Hem Prasath (Reg No: 190514)

R. Hemprasath (Reg No: 190515)

M. Jeevanandham (Reg No: 190516)

ABSTRACT: As time went on, the systems to be dealt with increased enormously in size and complexity. Simultaneously, there has been an evolution in combinatory and graph theory, which led to producing a number of highly efficient graph theoretic algorithms devised with an eye on economy in time and computer storage requirements. Because of space limitations the current review cannot deal with the whole spectrum of relevant topics and will try to cover only the problems of network analysis and synthesis.

KEYWORDS: Network, Circuit, Walk, Path, Cycle, Eulerian Graph, Kvl, Kcl.

GROUP V

TITLE OF PROJECT: GRAPH THEORY IN THE FIELD OF COMPUTER NETWORK SECURITY

NAME OF THE MENTOR: M. Nagaraj

STUDENT NAME: S. Karan Pandian (Reg No: 190517)

M. Karthick Pandian (Reg No: 190518)

P. Kasiraja (Reg No: 190519)

M. Kesavan (Reg No: 190520)

ABSTRACT: Graph theory has become a very critical component in many applications in the computing field including networking and security. Unfortunately, it is also amongst the most complex topics to understand and apply. In this paper, we review some of the key applications of graph theory in network security. We first cover Scenario graphs, Attack graphs and their tool kits.

KEYWORDS: Network Attack Graphs, Toolkit Architecture, Analysis of Attack Graphs.

GROUP VI

TITLE OF PROJECT: NETWORK ANALYSIS THROUGH GRAPH THEORY

NAME OF THE MENTOR: M. Nagaraj

STUDENT NAME: M.Krithickroshan (Reg No: 190521)

S.V.Lakshminarayanan (Reg No: 190522)

S.Mahendra Raj (Reg No: 190523)

ABSTRACT: As time went on, the systems to be dealt with increased enormously in size and complexity. Simultaneously, there has been an evolution in combinatory and graph theory, which led to producing a number of highly efficient graph theoretic algorithms devised with an eye on Economy in time and computer storage requirements. Because of space limitations the current review cannot deal with the whole spectrum of relevant topics and will try to cover only the problems of network analysis and synthesis.

KEYWORDS: Network analysis, Combinatory and Graph theory.

GROUP VII

TITLE OF PROJECT: A STUDY ON REAL-LIFE APPLICATIONS OF DYNAMICAL SYSTEMS

NAME OF THE MENTOR: C. Velmurugan

STUDENT NAME: M. Maruthamuthu (Reg No: 190527)

R. Manikandan (Reg No: 190524)

M. Manoj (Reg No: 190525)

S. Mareeswaran (Reg No: 190526)

ABSTRACT: In this paper, we discussed some applications of exciting fields like Mathematics, Statistics, Medical, Biological Sciences, Engineering, Economics etc. We show their real-life applications both theoretically and analytically considering some phenomena of the nature. We mainly focused on some applications of dynamical system in real life cases known as chaos, iteration, fractal geometry, Mandelbrot and Julia sets. We derive some mathematical formula concerning dynamical systems. Necessary programs are considered for all cases. We use Mathematica and MATLAB to perform programming.

KEYWORDS: Chaos, Iteration, Fractal, Mandelbrot and Julia sets.

GROUP VIII

TITLE OF PROJECT: A STUDY ON ACTIVITY DEPENDENCE OF SOLAR SUPERGRANULAR FRACTAL DIMENSION

NAME OF THE MENTOR: C. Velmurugan

STUDENT NAME: C. Mukilarasu (Reg No: 190529)

R. Prasanth (Reg No: 190534)

R. Muhesh Kannan (Reg No: 190528)

ABSTRACT: We study the complexity of supergranular cells using the intensity patterns obtained at the Kodaikanal Solar Observatory during the solar maximum. Our data consist of visually identified supergranular cells, from which a fractal dimension D for supergranulation is obtained according to the relation $P \propto A^{D/2}$, where A is the area and P the perimeter of the supergranular cells. We find a fractal dimension of about 1.12 for active region cells and about 1.25 for quiet region cells, a difference that could be attributed to the inhibiting effect of the magnetic field.

KEYWORDS: Data analysis methods, Statistical methods and techniques, image processing, Sun activity, Sun granulation, Sun photosphere.

GROUP IX

TITLE OF PROJECT: A STUDY ON FRACTAL APPLICATIONS IN BRAIN TUMOR

NAME OF THE MENTOR: C. Velmurugan

STUDENT NAME :   R. Nagarajan (Reg No: 190531)

S.V. Niranjan Ram (Reg No: 190532)

S. Pradeep (Reg No: 190533)

C. Santhanapandi (Reg No: 190535)

ABSTRACT: The Neurological Systems are extremely complex and fractals. This paper explains about Brain Tumors arise from the central nervous system can cause health issues in the body. Fractals Network is described by characteristics of fractals such as self- similarity. Percolation theory describes that the behaviour of the network by disconnecting nodes or links. The segmenting brain Tumors is a hard and complex task. The mass of a brain cancer grows exponentially, as shown by the Natural Logarithm. Minimal Spanning tree demonstrates that a tumor cell's graph is shortest path of connecting small branches of network nodes, signifying it is acyclic. The tumor is detected, segmented, and the tumor's frequency of occurrence is displayed.

KEYWORDS: Brain Tumor, Graph, Spanning Tree, Network.

GROUP X

TITLE OF PROJECT: GOLDEN RATIO IN LOGO DESIGNING

NAME OF THE MENTOR: Dr. R. Kalaivanan

STUDENT NAME :   D. Santhosh Kumar (Reg No: 190536)

R. Selva Kumar (Reg No: 190537)

P. Shiva Ganesh (Reg No: 190538)

ABSTRACT: The Golden ratio has great influence in architecture, biological systems, mathematics, art and also which is believed to hold the key to the secret of beauty and finds its representation in numerous, natural and manmade masterpieces. Product or logo or text acting major role that must make a positive and memorable impact on the conscious and subconscious minds of the observer and consumers. This is also used for designing Technology which making pleasant and perfect looks of any kind of designs. In this paper we briefly discuss about how to create an amusing model with help of Golden ratio and also find that the golden ratio exists in Vivekananda college logo, Google, What's App, Instagram, Google Chrome, Audi logo design, Audi car design.

KEYWORDS: College Logo, What's App, Instagram, Google Chrome, Audi logo design, Audi car design and Golden Ratio.

GROUP XI

TITLE OF PROJECT: GOLDEN RATIO IN HUMAN ANATOMY

NAME OF THE MENTOR: Dr. R. Kalaivanan

STUDENT NAME :   G. Siva (Reg No: 190539)

R. Sivapradap (Reg No: 190540)

A. Sureshkannan (Reg No: 190541)

M. Suresh Rama Kannan (Reg No: 190542)

ABSTRACT: The Fibonacci sequence of numbers is known since the ancient past. It is considered as a proportion which can be frequently appreciated in nature. The associated ratio, called as the golden ratio is manifested in the works of art, nature, galaxies, monuments etc. Many famous mathematicians, philosophers, and artists have used this ratio in their work. Humans distinguish this proportion as pleasing, as it enlightens beauty when applied in living or non-living entities. The ideal proportion is directly related to golden proportion. It ranges from 1 to 1.618. Moreover, the proportion can be applied in facial aesthetics also. Studies have showed that the beautiful faces have facial measurements close to golden ratio. Thus, the treatment following the standard will help in obtaining optimal facial aesthetics. The review is written with an aim to highlight the historical perspectives, its varied applications in the past and present; and further scope of research in future.

KEYWORDS: Golden angle, Golden proportion, Golden rectangle, Phi concept.

GROUP XII

TITLE OF PROJECT: GOLDEN RATIO IN NATURE AND ARCHITECTURE

NAME OF THE MENTOR: Dr. R. Kalaivanan

STUDENT NAME :   M. Surya (Reg No: 190543)

M. Suthan (Reg No: 190544)

V. Thirumoorthy (Reg No: 190545)

C. Yukesh (Reg No: 190546)

ABSTRACT: Golden Proportion or Golden Ratio is usually denoted by the Greek letter Phi (φ), in lower case, which represents an irrational number, 1.6180339887 approximately. Because of its unique and mystifying properties, many researchers and mathematicians have been studied about the Golden Ratio which is also known as Golden Section. Renaissance architects, artists and designers also studied on this interesting topic, documented and employed the Golden section proportions in eminent works of artefacts, sculptures, paintings and architectures. The Golden Proportion is considered as the most pleasing to human visual sensation and not limited to aesthetic beauty but also be found its existence in natural world through the body proportions of living beings, the growth patterns of many plants, insects and also in the model of enigmatic universe. The properties of Golden Section can be instituted in the pattern of mathematical series and geometrical patterns. This paper seeks to represent a panoptic view of the miraculous Golden Proportion and its relation with the nature, globe, universe, arts, design, mathematics and science. Geometrical substantiation of the equation of Phi, based on the classical geometric relations, is also explicated in this study. Golden Ratio and its chronicle, concept of Golden Mean and its relations with the geometry, various dynamic rectangles and their intimacy with Phi, Golden Ratio in the beauty of nature, Phi ratio in the design, architecture and engineering are also presented in this study in a panoptical manner.