



Ethiraj College For Women

(AUTONOMOUS)

Criterion III

3.4.1. - The Institution ensures implementation of its stated Code of Ethics for research

DVV Finding:

1. Provide Copy of the syllabus of the research methodology course work to indicate if research ethics is included.
2. Provide Constitution of the ethics committee and its proceedings as approved by the appropriate body
3. Provide Constitution of research advisory committee and its proceedings as approved by the appropriate body.
4. Provide Bills of purchase of licensed plagiarism check software in the name of the HEI for year 2020-21.

Response of HEI:

As per the DVV requirement, the following has been provided in the document attached.

1. Copy of the syllabus of the research methodology course work indicating research ethics
2. Constitution of the ethics committee and its proceedings as approved by the appropriate body
3. Constitution of research advisory committee and its proceedings as approved by the appropriate body.
4. Plagiarism check from University of Madras.

S. Uthairai.
Principal

ETHIRAJ COLLEGE FOR WOMEN
Chennai - 8

**ETHIRAJ COLLEGE FOR WOMEN (Autonomous)
Chennai – 600 008**

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3.4.1

**Inclusion of research ethics in the Research Methodology
course work**

M.PHIL- PLANT BIOLOGY AND PLANT BIOTECHNOLOGY

SEMESTER 1

CORE PAPER I- RESEARCH METHODOLOGY

COURSE CODE: 10M18/REM

CREDIT-5

COURSE OBJECTIVES:

To enable the students to

1. Understand the application of different types of microscopic techniques
2. Gain knowledge in general laboratory techniques of Biochemistry and Microbiology.
3. Provide insight in analytical separation techniques and their applications in Research.
4. Apply the fundamental concept of immunology to understand immunotechniques.
5. Impart the application of various statistical tools used in research and the significance of quality research publication.

UNIT 1 Microscopic technique:

Light microscope – Principle, construction and application –Dark field, Phase contrast, Fluorescence microscope, Polarization microscope and Confocal scanning microscope. Principle, construction, sample preparation and application of electron microscope – SEM , STEM, TEM.

UNIT II General Lab Technique:

pH Buffering mechanism. Choice and preparation of common buffers – Potassium Phosphate buffer and Tris Acetate Buffer. pH measurements. Methods of sterilization of media and Glassware. Media – Choice of media, isolation, purification and maintenance of Algae, Fungi and Bacteria. Methods of Determining microbial number – Batch culture, continuous culture. Application of Fermenters.

UNIT III Separation Technique:

Centrifugation:

Principle of sedimentation, Relative Centrifugal Force (G), Types and uses of Centrifuge –Bench top Centrifuge, Large capacity centrifuge, High Speed Refrigerated Centrifuge, Preparatory centrifuge and analytical centrifuge. Zonation and Isopycnic Centrifuge.



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Chromatography- Principle, procedure, applications-TLC, Column chromatography, Ion exchange chromatography, HPLC, HPTLC, GC-MS.

Electrophoresis- General principle-factors affecting electrophoresis samples, principle, procedure and applications-Agarose gel, PAGE and SDS-PAGE.

UNIT IV Immunotechnique:

Properties and type of Antibody and Antigen. Application and Production of Monoclonal antibodies and Polyclonal antibodies. Immunodiffusion, Immunoelectrophoresis, Immunolabelling – Biotin. ELISA.

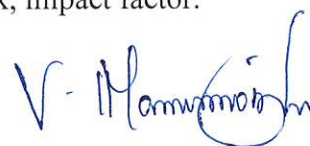
UNIT V Statistical methods:

Presentation of data-methods. Measurement of dispersion – range, variance, standard deviation, standard error. Test of significance based on large sample-small sample – Student t-test – ANOVA and DMRT. Probability – Probability distribution – Binomial, Poisson, and Normal. Simple correlation and Regression. Computer application - SPSS package. Designing the research work- components of a research report-thesis-plagiarism. Scientific writing – Manuscript preparation, citation style-citation index-H-index, impact factor.



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Mrs. V. MANIMOZHI M.Sc., M.Phil.,
Associate Professor & Head
Department of Plant Biology & Plant Biotechnology
Ethiraj College for Women
Chennai - 600 008.

BUSINESS ECONOMICS

SEMESTER-III

RESEARCH METHODOLOGY AND COMPUTER APPLICATIONS IN ECONOMICS

TotalHours:75

Course Code: 8P18/3C/RMC//3P18/3C/RMC

Credits : 4

LTP: 2/2/1

COURSE OBJECTIVES

1. To understand the scientific research process.
2. To know and apply statistical tools
3. To learn computer applications in executing economic research.

COURSE OUTLINE:

- UNIT I:** The Scientific Approach – Aims of Social Sciences –Scientific Sciences – Scientific Revolution – Role of Methodology – Research Process – Conceptual Foundation of Research – Economic Theory and Methods – Axiomatic, Mathematical and Historical Methods – Theory, Models and Empirical Research – Basic Elements in Research – Identification of a Research Problem–Hypothesis Formulation and Testing–Research Process–**Ethics in Research.** (15Hours)
- UNIT II:** Principles and Process in Data Collection – Primary Data – Case Study Method– Survey Research – Sample Selection – Sampling Design – Preparation of Structure Interview Schedule – Construction of Questionnaire – Pilot Study – Classification and Tabulation – Diagrammatic Representation – Secondary Data – Sourcing of Data for India and Tamil Nadu – Census of India, NSSO, Economic Survey, RBI Report, Agricultural Census, Annual Survey of Industries. (15Hours)
- UNIT III:** Concept of Data, Record and File – Type of Data and Data Structure – Data – File handling and operations – Data storage and retrieval – Data Operations – Algorithms like Sorting , Merging, Joining and Bifurcation – Data Base Concept and Operation on Data Base. (15 Hours)
- UNIT IV:** Series – Group tables – Groups and objects – Time and Frequency Series – Regression Methods and Techniques – Regression Analysis – Trends and Forecasting – Report writing – Plan of Research report – Style & Mechanics of writing Research report. (15Hours)
- UNITV:** Application of Software to Economic Research – (Practical Classes). (15 Hours)

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R. Shanthini

Maj.R.SHANTHINI
NCC / 14310008
ASSOCIATE NCC OFFICER
1(TN) Girls Bn NCC Madras 'A'
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Chennai - 600 008.

ZOOLOGY
III SEMESTER
SELF STUDY PAPER
RESEARCH METHODOLOGY

SYLLABUS

UNIT-I **(15Hrs)**

Life Science - Basic concepts, Definition, Laws, Characteristics, knowledge, Information and Data, Pseudoscience. Units of measurements, Concepts of Research - Meaning, Objectives, Motivation and Approaches, Types of Research (Descriptive / Analytical, Applied / Fundamental, Quantitative / Qualitative, Conceptual / Empirical, Research Methodology.

UNIT-II **(15Hrs)**

Research Formulation-Observation and Facts, Prediction and explanation, Induction, Deduction. Defining and formulating the research problem, Selecting the problem and necessity of defining the problem. Literature review - Importance of literature reviewing in defining a problem, Critical literature review, Identifying gap areas from literature review, Hypothesis - Null and alternate hypothesis and testing of hypothesis.

UNIT-III **(15Hrs)**

Research Designs-Basic principles, Meaning, Need and features of good design, Important concepts, Types of research designs, Development of a research plan -Exploration, Description, Diagnosis, Experimentation, determining experimental and sample designs, Data collection techniques.

UNIT-IV **(15Hrs)**

Project proposal writing, Research report writing (Thesis and dissertations, Research articles, Oral communications). Presentation techniques - Assignment, Seminar, Debate, Workshop, Colloquium, Conference. Information Science, Extension and Ethics, Sources of Information -Primary and secondary sources, Library - books, journals, periodicals, reference sources, Abstracting and indexing sources, Reviews, Treatise, Monographs, Patents, Internet - Search engines and software, Online libraries, e-Books, e-Encyclopedia, TED Talk, Institutional Websites.

UNIT-V **(15Hrs)**

Intellectual Property Rights - Copy right, Designs, Patents, Trademarks, Geographical indications. Safety and precaution - ISO standards for safety, Lab protocols, Lab animal use, care and welfare, animal houses, radiation hazards. Extension: Lab to Field, Extension communication, Extension tools, **Bioethics: Laws in India, Working with man and animals, Consent, Animal Ethical, Committees and Constitution.**

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Chennai - 8

P. Anandhi

Mrs. P. ANANDHI
Associate Professor and Head
PG & Research
Department of Zoology
Ethiraj College for Women, Chennai

MICROBIOLOGY
SEMESTER II
ANALYTICAL TOOLS AND RESEARCH METHODOLOGY

TOTAL HOURS: 60
CREDITS: 4

COURSE CODE: 16SP18/2C/ARM
LTP: 3-1-0

COURSE OBJECTIVES:

1. Learn principles and applications of types of spectrometry
2. Explain principles and applications of types of centrifuge and chromatography techniques
3. Discuss principles of Electrophoresis, PCR, Scintillation counter, biosensors and microbial identification systems.
4. Learn the Art of report and thesis writing
5. Provide insights on importance of scientific communication, **ethical issues in research**, plagiarism and IPR.

COURSE OUTLINE:

UNIT I

12 Hours

Principles of analytical instrumentation –Techniques and applications of Colorimetry and Spectrophotometry- Beer lamberts Law, Turbidimetry, UV-Vis Spectroscopy, Fourier Transform Infrared Spectroscopy, Fluorescence spectroscopy, NMR spectroscopy, Mass Spectroscopy, Circular Dichroism and Optical Rotatory Dispersion (ORD).

UNIT II

12 Hours

Centrifugation- Basic Principles, Instrumentation, types of Centrifuges and Methods of Centrifugation. Chromatography- Principles and types- Column, Thin layer, Paper, Adsorption, Gas liquid, Ion Exchange, Affinity, HPLC working and applications

UNIT III

12 Hours

Electrophoretic techniques- Native, SDS and 2D. Gel documentation system. PCR principle and applications. Detection and measurement of radioactivity –liquid and solid scintillation counters, Biosensors - Definition, Components of Biosensors, Types –Electrochemical, Enzyme, Environmental Biosensors and Application of Biosensors. Microbial identification systems (API).

UNIT IV

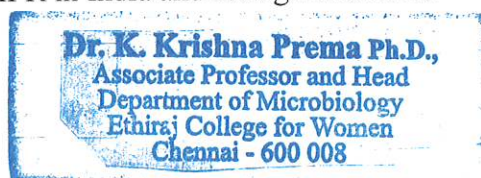
12 Hours

Objectives of Research- Problem identification and formulation, Approaches, design-exploratory descriptive and experimental, steps and Criteria of good research. Writing the research Report-Title, Authors, Address, Abstract, Keywords, Introduction, Review of literature, Materials and Methods, Results, Discussions, Summary, Acknowledgement and Bibliography, Research report- Tables, Figures and Formatting.

UNIT V

12 Hours

Importance of Scientific communication- Types and modes of scientific communications. Journals in Microbiology, Impact factor of Journals, When and Where to publish. **Ethical issues related to publishing**, Data fudging, **Plagiarism and self plagiarism, software to detect plagiarism**. Intellectual property rights-Types, patents, copy rights, trade marks, design rights, geographical indications – importance of IPR – patentable and non patentables – patenting life – legal protection of inventions – world intellectual property rights organization (WIPO). Comparison of IPR in India and foreign countries.



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CHEMISTRY

Core 1-SCIENTIFIC **RESEARCH METHODOLOGY**

Teaching hours: 15 x 4 = 60 Hrs

Course Code: 6M18/SRM

Credits: 5

Objectives:

1. To impart knowledge to do literature survey
2. To learn the experimental techniques for research work
3. To analyze and interpret research data using statistical Techniques
4. To impart knowledge in conventions of thesis and assignment writing
5. To introduce modern teaching methodologies

COURSE OUTLINE:

UNIT I: Introduction to Research: Importance of research- Aims, objectives, Selection of research problems-Survey of scientific literature-Primary and secondary sources. Funding agencies
12 hrs

UNIT II: Conduct of Research Work: Physical properties useful in analysis and method of separation prior to analysis-Isolation techniques-Extraction, crystallization, sublimation, distillation, - High vacuum distillation techniques - cyclic distillation, analytical distillation, thermal hazards of these techniques- chromatography-column, paper, thin layer, gas chromatography - reaction techniques to include high dilution, vacuum line reaction, reactions aided by azeotropic distillation, recycling, pyrolysis, Soxhlet extraction, continuous reactions, reactions at low temperatures, reactions in non aqueous media and molten salts, micro quantity handling and use of globe box. Special methods in modern chemistry-methods for vacuum sublimation and quasi sublimation, technique and apparatus for reactions in inert atmosphere and at under low temperature, working with compressed gases, heating under pressure, chemistry of working with hazardous materials- air / water sensitive, corrosive, toxic explosive and radioactive materials.
12 hrs

UNIT III: Statistical treatment of Analytical Results: Precision and Accuracy-Reliability-Determinate and random errors-Distribution of random errors-Normal distribution curve. Statistical treatment of finite samples - the student's T test and F test-criteria for rejection of an observation Q test. Significant figures and computation rules. Data plotting - Least square analysis-significance of correlation coefficient.
12 hrs

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ECONOMICS
SEMESTER – I
RESEARCH METHODOLOGY

Total Hours: 90
Credits: 5

Course Code: 3M18/RMY
LTP: 3/2/1

COURSE OBJECTIVES

1. To understand the research process and research design
2. To apply mathematical and statistical tools to arrive at conclusion

COURSE OUTLINE:

- UNIT-I:** Meaning of Research- Qualities of a Research Worker - Pure and Applied Research- Scientific Method of Research- Definition- Stages - Steps- Logical- Inductive- Deductive Methods- **Ethics in Research.**
(20 hrs)
- UNIT-II:** Purpose of Research- Functions of Research - Research Problem - Research Design- Research Process - Statistical Unit- Sampling Methods- Observation- Case Study- Experimental- Interview- Questionnaire- Pilot Study- Planning of Survey.(20 hrs)
- UNIT-III:** Statistical Tools- Descriptive Statistics- Correlation- Partial- Multiple- Regression- Forecasting- Fitting a Trend Line- Formulation of Hypothesis- Testing of Hypothesis - Z test- t test-Anova- Chi square- Use of Excel and SPSS- Uni-variate– Bi-variate Analysis. (20 hrs)
- UNIT-IV:** Sources of Data- Determination of Sample Size- Collection- Classification- Tabulation- One Way- Two Way-Presentation- Analysis - Application of Statistical Tools- Interpretation of Results.
(20 hrs)
- UNIT-V:** Preparation and Writing of Research Report- Styles of Writing- MLA Style- Front Matter- Title Page- Table of Contents- List of Tables and Figures- Foot Notes- Back Matter- Appendices- Glossary-Bibliography.
(10 hrs)

R. Shanthini
13/05/22

Maj.R.SHANTHINI
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UNIT IV: Thesis writing: Conventions of writing - General format-page and chapter format use of quotations and footnotes-preparation of tables and figures-referencing appendices-revising, editing and evaluating the final material-proof reading meanings and examples of commonly used abbreviations. **Plagiarism ,importance control and checking of Plagiarism through software tools**

12 hrs

UNIT V: Modern Teaching methodology: Methods of teaching chemistry: Inductive, deductive, analytic, synthetic, heuristic, project problem solving and lab methods. Chemistry Curriculum: i. Organisation-logical psychological, topical, spiral and integrated approaches correlating with life, nature, other disciplines and different branches in chemistry. ii. Individualized techniques-homework assignments, programmed instruction and computer aided instruction (CAI), Group methods-Seminar, Symposium, and Workshop. Working style in teaching and learning-giving and getting feedback, relationship of learning to education-liberal, progressive and humanistic. Learning resources and equipment - Textbook, workbook, library, audio-visual aids, mass media, chemistry club activities.

12 hrs

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S. Sudha Parimala

Dr. Mrs. S. SUDHA PARIMALA
ASSOCIATE PROFESSOR
DEPT. OF CHEMISTRY
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CHENNAI-600 008

Mrs. R. SHANTINI
ASSOCIATE PROFESSOR
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HUMAN RIGHTS AND DUTIES EDUCATION

SEMESTER III

RESEARCH METHODOLOGY AND REPORT WRITING FOR SOCIAL SCIENCES

Teaching hours: 90 hrs

Credit: 4

Course Code : 9SP18/3C/RMR

LTP: 3 3 0

COURSE OBJECTIVES:

- To provide a basic understanding of research methodology .
- To equip the learners with the ability to select research topic and make project proposals
- To endow the students with knowledge of research methods
- To describe the data collection techniques
- To demonstrate and provide sufficient practice in data analysis techniques
- To explain the basic statistical techniques used for date analysis

COURSE OUTLINE:

- Unit I** Nature and definition of research; Human rights as an object of inquiry; Selecting a research problem; literature review; Framing a research proposal 15 hrs
- Unit II** Variables, Objectives, Research questions and Hypothesis; Research methods - descriptive, analytical, comparative, survey, case study. 15 hrs
- Unit III** Data collection: types of data, methods of data collection - observation, interview; Research tools - questionnaires, schedules and scales; Sampling: probability - simple random, systematic, stratified, multi stage; Non probability - snowball, purposive; pilot study; reliability and validity 20 hrs
- Unit IV** Data analysis - Report writing, interpretation of results, quantitative and qualitative analysis, documentation, chapterization, references, Problems, **Ethics and Confidentiality in human rights research.** 20 hrs
- Unit V** Statistics - Measures of Central Tendency - Mean, median and mode – Measures of variability: Range, quartile deviation, standard deviation and coefficient – Correlation, Inferential statistics, ‘t’ test, Chi-square test, F-test, Analysis of variance, SPSS 20hrs

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R. Nithya
13/7/2022

HEAD

PG DEPARTMENT OF HUMAN RIGHTS AND DUTIES EDUCATION
ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS)
EGMORE, CHENNAI - 600 008.

BIOCHEMISTRY

SEMESTER II

ELECTIVE - RESEARCH METHODOLOGY

TEACHING HOURS: 60

COURSE CODE: 15SP18/2E/RMT

CREDITS: 3

LTP: 3 1 0

COURSE OBJECTIVE

1. To introduce students to research and thesis writing.
2. To introduce the various approaches to biochemical investigations.
3. To expose students to the preparation of plant extracts.
4. To impart knowledge on different cell line cultures used in research.
5. To impart knowledge on various types of spectroscopy.

COURSE OUTLINE:

Unit I :

(12 HRS)

Types of Research - Fundamental & Applied, Descriptive & Analytical, Quantitative & Qualitative. Research funding agencies , Fellowships, Grants Thesis writing- Introduction, Review of Literature, Aim and scope, Materials and Methods, Results and Discussion, Summary and Conclusion, Bibliography- Harvard and Vancouver systems, Scientific writing for journals - Preparation of Abstract, Impact factor of journals, H Index, , Intellectual property rights- Introduction , Patent , Basis of patentability , Non patentable inventions , Methods to apply for patents.

Unit II :

(12 HRS)

General approaches to Biochemical Investigations - Whole animal studies -Ethical Committee clearance-IAEC, CPCSEA. Maintenance of animals , Control and experimental groups , Experimental design- CRD, RBD and latin square design..Experiments with animals models- Metabolism of xenobiotics, Toxicity studies, Experimental Induction of diseases. Organ perfusion and tissue slice techniques. Experiments with human volunteers -, Ethical clearance, Institutional Ethical committee., Consent form, Stages of drug development, Clinical trials

Unit III :

(12 HRS)

Preparation of plant extracts-Solvents used. Methods for extraction- Maceration, Infusion, Percolation, Digestion ,Decoction, Hot continuous extraction (Soxhlet), Ultrasound extraction (sonication). Plant secondary metabolites- Tannins, Flavanoids & Alkaloids - Isolation and Characterization Free radicals, Free radical induced damages , Lipid peroxidation , Antioxidants , Enzymic and Non enzymic antioxidants, Phytochemicals as antioxidants, Methods to assess Antioxidant activity- FRAP, ABTS, DPPH.

Unit IV :

(12 HRS)

Different Cell lines and Current research using cell lines, MTT assay. Cell sorting and Cell counting - Flow cytometry (FACS and Coulter counter). Experiments with Cell isolates - Sequence analysis-DNA and Amino acid sequencer, Comet Assay Nanotechnology – Classification, Preparation using biological material, Characterisation- Zeta potential, AFM, DLS and Biological applications – Drug delivery (Dendrimers, Liposomes)

Unit V:

(12 HRS)

Spectroscopy – Principle, Instrumentation and applications of -ESR , NMR spectroscopy X ray diffraction , Circular Dichorism and Mass Spectroscopy

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Dr. M. SUJATHA, M.Sc., M.Phil., Ph.D.,
Associate Professor & Head
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Ethiraj College for Women
Egmore, Chennai-600 008.



CLINICAL NUTRITION AND DIETETICS

SEMESTER II

APPLIED STATISTICS AND RESEARCH METHODOLOGY

CORE - 5

TOTAL HOURS: 75 hours

COURSE CODE: 13SP18/2C/SRM

CREDITS: 4

L-T-P: 3-2-0

COURSE OUTLINE

UNIT I:

(10 HOURS)

Meaning of research, Purposes of research, Types of research; Selecting a research problem and preparing a research proposal-The academic research problem, using the library, sending related literature, Note taking; Preparation of a research proposal for getting funds for the research; **Ethical Issues- Ethical importance of consent in research, Regulations and Guidelines for research on human subjects**; Intellectual Property Rights Experimental and quasi experimental research- Principles of experimental research experimental and control groups, variables, controlling extraneous variables, experimental validity, experimental designs, pre, post, true and quasi experimental design, Factorial design, Theory and hypothesis, experimental control

UNIT II:

(10 HOURS)

Sampling and Sample Designs-Census and sample methods-Theoretical basis of sampling, law of statistical regularity, law of inertia of large numbers, essentials of sampling. Sampling from infinite population-concept of sampling distribution and standard error, relationship between sample size and standard error; Standard errors of sample mean. Sample variance, sample standard deviation and sample mean, sample standard deviation and sample proportion and the differences in these values. Methods of sampling Non-probability sampling methods, advantages, Limitation of probability sampling; Probability sampling methods –Types, Selection of appropriate method of sampling, size of sample, merits and limitations of sampling, sampling and non-sampling errors.

UNIT III:

(10 HOURS)

Collection of Data-Primary and secondary data, sources, published and unpublished sources, Editing primary and secondary data, and precautions in the use of secondary data. Organization of data collection –Limitations and sources of error, Tools of research- Quantitative and Qualitative studies. Observation, Questionnaire, Opinionnaire- various methods and techniques; Reliability and validity of research tools. Classification and tabulation of Data-Meaning and objectives of classification, objects of classification, Types of classification, formation of frequency distribution, types symmetric and asymmetric distribution considerations in the construction of frequency distribution

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Tabulation of data-Difference between classification and tabulation of data, Role of tabulation Parts of the table, general rules of tabulation Review of a table types of tables, machine tabulation. Editing and coding of data records.

Diagrammatic and graphical representation Significance of diagrams and graphs, comparison of tabular and diagrammatic presentation types of diagrams. Graphs- Techniques of constructing graphs, graphs of time series or line graphs Rules for constructing the line graph or natural scale, types of graphs, graphs of frequency distribution-Histogram, frequency polygon, smoothed frequency curve, cumulative frequency curves or gives, limitations of diagrams and graphs.

UNIT IV:

(35 HOURS)

Meaning of statistics, scope and limitations of statistic as a tool for decision making under uncertainty

Measures of central tendency –mean, median, mode and their relative merits finding combined mean, weighted mean, finding median and mode graphically.

Measures of variation-absolute and relative measures-range standard deviation of mean, combined standard deviation given the SD's of two distribution, coefficient of variation, percentiles and their applications

Correlation methods-meaning, product moment, coefficient of correlation, rank correlation, scatter diagram and regression lines and their uses. Concepts of partial and multiple correlations

Test of significance-hypothesis testing, tests involving normal distribution, tests for large and small samplest tests-A tests to compare means of population and sample means of two independent samples c means of two dependent samples ,F tests-comparison of SD's of two samples ,analysis of variance , non-parametric tests-chi square test.

UNIT V:

(10 HOURS)

Report Writing -style manual, format of the research report ,The thesis or dissertation- style of writing, typing a report, reference form (Bibliography)-Pagination, tables, figures- Evaluating a research report-Foot notes **plagiarism**, Technical and popular reports

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Varalakshmi Rajam.S.

Dr. Varalakshmi Rajam.S., M.Sc., M.Phil., Ph.D.
Head of the Department
PG & Research Department of Food and Nutrition and
Department of Clinical Nutrition and Dietetics (Self Supporting)
Ethiraj College for Women
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Re-accredited with A Grade by NAAC



3.4.1

Presence of Ethics Committee

ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS) CHENNAI
DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS

INDEPENDENT ETHICS COMMITTEE

Chairperson	: Dr. Jahan Aara Razick M.Sc, DHed, Ph.D.
Co-Chairperson	: Dr. N. Malathi, M.Sc., M.Phil., Ph.D.
Member Secretary	: Mrs.Varalakshmi Rajam. S, M.Sc., M.Phil.
Members	: Dr. R.K. Maya, M.A, Ph.D.
	Dr. K. Baraneedharan, M.D.
	Mr. K.Sasisekaran, B.Sc., B.L.

To
The Principal Investigators,
Department of Clinical Nutrition and Dietetics,
Ethiraj College for Women,
Chennai – 600008.

**Sub: Independent ethics committee approval for the conduct of the study
“Acceptability of fermented pearl millet based recipes among adolescent girls” as per
the protocol dated 6th December 2017.**

Name of the Principal Investigator : Ms. V.S. Yuvarani
Mrs. Bavani Pazhani., M.Sc., M.Phil.

Address : Department of Clinical Nutrition and Dietetics,
Ethiraj College for Women,
Chennai – 600008.

Dear Ms. V.S. Yuvarani and Mrs. Bavani Pazhani., M.Sc., M.Phil.

The Independent Ethics Committee Meeting held on 06.12.2017 the following members were present during the meeting.

S.No	Name	Specialty and Affiliation	Gender
1	Dr. Mrs. Jahan Aara Razick	Associate Professor and Head Department of Home Science Justice Basheer Ahmed Sayeed College for Women, Chennai.	Female
2	Dr. N. Malathi	Associate Professor, Department of Home Science Quaid-E-Millath Govt College, Chennai.	Female
3	Dr. K. Baraneedharan	Consultant Diabetologist, Global Hospital, Chennai.	Male
4	Dr. R.K. Maya	Assistant Professor, Department of History and TTM, Ethiraj College for Women, Chennai.	Female
5	Mr. K. Sasisekaran	Advocate and Notary	Male
6	Mrs. Varalakshmi Rajam. S	Associate Professor and Head Department of Clinical Nutrition and Dietetics, Ethiraj College for Women, Chennai.	Female

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ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS) CHENNAI
DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS
INDEPENDENT ETHICS COMMITTEE

Chairperson	:	Dr. Jahan Aara Razick, M.Sc., DHEd., Ph.D.
Co-chairperson	:	Dr. Malathi.N, M.Sc., M.Phil., Ph.D.
Member Secretary	:	Mrs. Varalakshmi Rajam. S, M.Sc., M.Phil.
Members	:	Dr. Maya.R.K, M.A., Ph.D.
	:	Dr. Baraneedharan. K, M.D.
	:	Mr. Sasisekaran.K, B.Sc., B.L

The Independent Ethics Committee has reviewed and approved the following documents:

The protocol dated, 6th December, 2017

The informed consent in English dated, 6th December 2017


Please keep the Independent Ethics Committee informed about any deviations/changes made to the protocol and all the adverse events that are both serious and unexpected or any new information that may affect adversely the safety of the subjects participating in the trial. You are also obliged to inform the progress of the study to the Ethics Committee.

Dr. Jahan Aara Razick


Chairperson, Ethics committee

Mrs. Varalakshmi Rajam. S

Member Secretary, Ethics Committee


Signature with Date

Dr. (Mrs.) Jahan Aara Razick
Associate Professor
Staff
Child Development Centre
Department of Clinical Nutrition and Dietetics
JBAS
Chennai-600 008.


Signature with Date
S. Kothari
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ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS), CHENNAI
DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS
INDEPENDENT ETHICS COMMITTEE

Chairperson : **Dr. Malathi, M.Sc., M.Phil., Ph.D.**
Co-Chairperson : **Mrs. Sachdev Meenakshi, M.Sc., PGDND**
Member Secretary : **Mrs. Varalakshmi Rajam. S, M.Sc., M.Phil.**
Members : **Dr. Maya, M.A., Ph.D.**
Dr. K. Baraneedharan, M.D.
Mr. Sasisekaran, B.Sc., B.L

To

The Principal Investigators,
Department of Clinical Nutrition and Dietetics,
Ethiraj College for Women
Chennai – 600008

Sub: Independent Ethics Committee Approval for the Conduct of the study “A study on physico chemical parameters, nutritive value, shelf life and acceptability of cold pressed sesame oil as per the protocol taken on 13th February 2017.

Name of the Principal Investigators : **Ms. Shantha Rajamani, Research Scholar**
: **Mrs. Stella Sherry, M.Sc., M.Phil.**
Assistant Professor

Address : Department of Nutrition, Food service Management
and Dietetics.
Ethiraj College for Women
Chennai – 600008

Dear Ms. Shantha Rajamani and Mrs. Stella Sherry, M.Sc., M.Phil.
The independent ethics committee meeting held on 13.02.2017 and the following members were present during this meeting.

S. No.	Name	Speciality and Affiliation	Gender
1	Dr. Malathi	Associate Professor, Department of Home Science, Quaid-E-Millath Govt College, Chennai.	Female
2	Mrs. Sachdev Meenakshi	Chief Dietician, Tamil Nadu Government Multi-Super-Specialty Hospital, Chennai.	Female
3	Dr. K. Baraneedharan	Consultant Diabetologist, Global Hospital, Chennai.	Male
4	Dr. R.K. Maya	Assistant Professor, Department of History and TTM, Ethiraj College for Women.	Female
5	Mr. K. Sasisekaran	Advocate and Notary	Male
6	Mrs. S. Varalakshmi Rajam	Assistant Professor and Head, Department of Clinical Nutrition and Dietetics, Ethiraj College for Women, Chennai	Female

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ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS), CHENNAI
DEPARTMENT OF CLINICAL NUTRITION AND DIETETICS
INDEPENDENT ETHICS COMMITTEE

Chairperson : Dr. Malathi, M.Sc., M.Phil., Ph.D.
Co-Chairperson : Mrs. Sachdev Meenakshi, M.Sc., PGDND
Member Secretary : Mrs. S. Varalakshmi Rajam, M.Sc., M.Phil.
Members : Dr. R.K.Maya, M.A., Ph.D.
Dr. K. Baraneedharan, M.D.
Mr. Sasisekaran, B.Sc., B.L.


The Independent Ethics Committee has reviewed and approved the following documents:

- The protocol dated 13th February 2017
- The informed consent in English dated 13th February 2017

Please keep the independent ethics committee informed about any deviation/changes made to the protocol and adverse events that are both serious and unexpected or any new information that may affect adversely the safety of the subjects participating in the trial. You are also obliged to inform the progress of the study to the ethics committee.

Dr. Malathi


Chairperson, Ethics Committee



Signature with date 22/8/17

Dr. N. MALATHI, M.Sc., M.Phil., Ph.D.
Associate Professor
Department of Home Science
Quaid-E-Millath Govt. College for Women (A)
Chennai - 600 002

Mrs. Varalakshmi Rajam. S

Member Secretary, Ethics Committee


Signature with date 8/9/17


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Tmt. Varalakshmi Rajam. S., M.Sc., MPhil
Head of the Department
Department of Clinical Nutrition
and Dietetics (Self Supporting)
Ethiraj College for Women
Chennai - 600 008.



சித்தமருத்துவ மைய ஆராய்ச்சி நிலையம்
(மத்திய சித்த மருத்துவ ஆராய்ச்சிக் குழுமம், ஆயுஷ் அமைச்சகம், இந்திய அரசு)

सिद्ध केंद्रीय अनुसन्धान संस्थान

(सी सी.आर.एस., चेन्नई, आयुष मंत्रालय, भारत सरकार), अण्णा सरकारी अस्पताल परिसर, अरुम्बावकम, चेन्नई - 600106

SIDDHA CENTRAL RESEARCH INSTITUTE

(Central Council for Research in Siddha, Chennai, Ministry of AYUSH, Government of India)
Anna Govt. Hospital Campus, Arumbakkam, Chennai - 600106, E-mail: crisiddha@gmail.com
Phone: 044-26214925, 26214809, Web: http://crisiddha.tn.nic.in

Animal House Registration No. 512/GO/R/S/01/CPCSEA, Dated 31/10/2001

Institutional Animal Ethics Committee

IAEC Number	202/Pharma-SCRI/2019	IAEC Approval Date	30.03.2019
IAEC Renewal Date	14.08.2020	Date of Expiry	13.08.2021

This is to certify that the project entitled "A study on anti-ulcerogenic effect of sprouts of *Cocos nucifera* L. against indomethacin-induced gastric ulcer in experimental rats" submitted by Abiraami Valli. S, Ph.D. Research Scholar, has been renewed in the 33rd IAEC meeting held on 14.08.2020 at Siddha Central Research Institute.

This project has been **APPROVED & RENEWED**

Details of the animals approved for the entire study:

Animal	Strain	Sex	No. of Animals
Rat	Wistar	Male	18 Nos
Rat	Wistar	Female	18 Nos
Total			36 Nos

Signature with Date

Dr. P. Sathiyarajeswaran
IAEC, Chairman

Signature with Date

Dr. G. Dayanand Reddy,
IAEC, Member Secretary

Signature with Date

Shri.K.R. Navaneetha Krishnan
CPCSEA, Nominee

S. Kotarai

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21-Aug-2021

To,
Dr Sujatha M,
Dean of Academics, Associate Professor & Head,
Dept of Biochemistry,
Ethiraj college for women,
Chennai.

Sub: Protocol Number: **ARC/IEC/Others/001/2021**
Protocol title: **Health Implication of PCOS in Urban College Girls - opinion letter**

Dear Dr Sujatha M,

The ARCIEC meeting was held on **10-Aug-2021** and discussed the above-mentioned protocol. Following is the list of documents that were submitted for review,

1. Protocol
2. Participant Information Sheet
3. Informed Consent Form
4. Proforma/ Questionnaire
5. CV of study team

After reviewing the above documents, the IEC had the following suggestions,

- a) To include diagnosis of PCOS in Materials and Methods section, according to Rotterdam criteria
- b) In Protocol, under section "c. Methods & Procedures", it is mentioned as "CrP & Lipid profile" as Cardiac Markers. Change that to "Lipid profile"
- c) Suggested to have a clinician in the study
- d) To change the format for Informed Consent Form (ICF) and Patient Information Sheet (PIS) as per ICMR guidelines
- e) To safeguard the participants safety, it is recommended to have unique patient ID instead of patient name in Questionnaire
- f) To provide MoU between the Institution and Thyrocare (External service provider) – MoU should cover the details of Services requested, Duration, Purpose and how identity of the participants are maintained
- g) To include source of funding and cost involved for the procedures that are involved in study in the protocol
- h) To provide the rationale for sample size. It is suggested to increase study population.

ARCIEC **conditionally approves** the above-mentioned study in its presented format, provided the PI clarifies the above suggestions to the satisfaction of the IEC.

For all communications with ARCIEC related to this study, you are requested to mention the ARCIEC number.



Thanks & Regards,
Mrs Sargunadevi.

Regd. : # 22/2, ESI Hospital Road, Peravallur, (Perambur), Chennai - 600 011

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Helpline : +91 78 11 999 999

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S. Kothari
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21-Aug-2021

To,
Dr Sujatha M,
Dean of Academics, Associate professor & Head,
Dept of Biochemistry,
Ethiraj college for women,
Chennai.

Sub: Protocol Number: **ARC/IEC/Others/002/2021**
Protocol title: **Study on the levels of Phthalate thyroid hormones Estrogen and Progesterone in long term plastic using women participants - opinion letter**

Dear Dr Sujatha M,

The ARCIEC meeting was held on **10-Aug-2021** and discussed the above-mentioned protocol. Following is the list of documents that were submitted for review,

1. Protocol
2. Participant information sheet
3. Informed consent form
4. Proforma / Questionnaire
5. CV of study team

After reviewing the above documents, the IEC had the following queries,

- a) To evaluate S. Estradiol and S. Progesterone on Day2 or Day3 of menstrual cycle
- b) To consult and include an Obstetrician and Gynecologist in the study for the tests to be performed that are involved in the study
- c) To change the format for Informed Consent Form (ICF) and Patient Information Sheet (PIS) as per ICMR guidelines
- d) To safeguard the participants safety, it is recommended to have unique patient ID instead of patient name in Questionnaire
- e) To provide MoU between the institution and Thyrocare (External service provider) – MoU should cover the details of Services requested, Duration, Purpose and how identity of the participants are maintained.
- f) To include financial support provider and cost involved for the procedures that are involved in study in the protocol
- g) To provide the rationale for total subjects' calculation. It is suggested to increase study population to arrive at a decision that represent the whole community.

ARCIEC **conditionally approves** the above-mentioned study in its presented format, provided the PI clarifies the above suggestions to the satisfaction of the IEC.

For all communications with ARCIEC related to this study, requested to mention the ARCIEC number.

Thanks & Regards,
Mrs Sargunda devi



Regd. : # 22/2, ESI Hospital Road, Peravallur, [Perambur], Chennai - 600 096

Tamil Nadu | Puducherry | Kerala | Andra Pradesh | West Bengal | Sri Lanka

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www.arcivf.com

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Ethiraj College For Women

(AUTONOMOUS)

RESEARCH ADVISORY COMMITTEE

- President – **Tmt. Chandra Devi Thanikachalam**, Chairperson
- Secretary - **Dr. S. Kothai**, Principal
- Members – **Prof. E. Murugan**, University Representative
- Thiru. S. Sridharan**,
- Prof. S. Vittal**
- Dr. D. B. Usha Rani**, Vice Principal (Aided)
- Dr. T. Usha Priya**, Vice Principal (Self Supporting)
- Dr. A. S. Saranya**, Dean of Research (Aided)
- Dr. K. Krishna Prema**, Dean of Research (Self Supporting)

S. Kothai.

Principal
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MINUTES OF ECRIC MEETING HELD ON 21st DECEMBER 2021

An online meeting (regarding Research activities) was held on **21st December 2021** at 10.00 am with Dr.Murugan, Trust Board member in the chair. Principal Incharge Dr. D. B. Usha Rani and Dean of Research Dr. S. Uma Gowrie (Aided) were present.

Dr. Uma Gowrie, Dean of Research (Aided Stream), Dr. Krishna Prema, Head, Department of Micro Biology (Self-Supporting), Dr.SudhaParimala, Department of Chemistry(Aided), Dr.C. N. Deepa, Department of Bio Chemistry, Dr.Pavithra, Department of Human Rights and Duties Education, Dr.Menaka, Department of Clinical Nutrition and Dietetics and Mrs.Jayashree, Department of Economics (Aided) attended the meeting. The following points were discussed.

Principal Incharge welcomed all the members. Dr. Uma Gowrie read out the agenda. He thanked the chair person and other trust board members for the support given to all the ECRIC activities.

1. The first agenda was Increase in Ph.D fellowship from 5 to 10 students. Mr.Murugan approved increase in Ph.D fellowship (Full-Time) from 5 students to 10 students selected based on Merit with effect from June 2021 (As per ECRIC guidelines). Henceforth in the next academic year, application should be invited, scrutinized and selected during March to June by the Research Committee constituting Principal, Vice Principals, Dean of Research (Aided) and (Self Supporting) and placed before external members from Science and Humanities.
2. Reimbursement of publication fees to a maximum of Rs.10,000/- per Faculty per year for the research paper indexed in **UGC CARE list/Scopus/Web of Science** journal was approved for 5 Faculty members from Aided for 11 Research papers and 20 Faculty members from Self Supporting for 26 Research papers. Prof.Murugan insisted henceforth, the reimbursement has to be based on impact

factor in addition to indexed journals and further the scrutiny should be by the Research Committee along with an external members.

3. Dr.Murugan asked the Dean of Research to circulate the information for the Faculty members selected for the major and minor projects (2020 – 2021) should submit a report for the mid-term evaluation by external experts for further allotment of funds. Screening and selection of the Faculty projects received during the academic year 2021-2022 to be implemented during 2022- 2023 should be screened by Deans of Research with the panel of experts (1 from Science and 1 from Humanities).
4. Dr.Murugan also added that Projects received from external agencies by the Faculty should pay the overhead charges mentioned in their approval letter to the college of which 33% can be claimed by the Principal Investigator of the project. Dr.Sudhaparimala thanked Murugan sir for giving approval.
5. Dr.Murugan said that February 28th would be celebrated as National Science Day. On that day Research day be celebrated in our college. On Research day, Research supervisors those who have finished one or more Ph.D students could be felicitated as a token of appreciation and they could be given Rs. 3,000 cash prize per student per academic year. Also, Faculty receiving external funding should be given a letter of appreciation from the Chairperson and recognized during Research day. He also applauded Dr. D.B. Usha Rani for getting an SCERT project. He also added that Ph.D students with best paper awards in National and International Conference will also be recognized on Research day.

Dr.Usha Rani thanked Dr.Murugan and she added this kind of appreciation would definitely motivate the Research guides and also others to apply for Guideship. Dr. Uma Gowrie thanked Dr.Murugan, Principal Incharge and all the ECRIC members who attended the meeting.

Members who attended the meeting on **21st December 2021.**

1. Chair person : Dr.Murugan
2. Principal Incharge : Dr. D. B. Usharani

D.B. Usharani

3. Dean of Research(Aided) : Dr. S. Uma Gowrie

S. Uma Gowrie

4. Dr. K. Krishna Prema, Head, Department of Microbiology

K. Krishna Prema

5. Dr.S. Sudha Parimala, Department of Chemistry

6. Dr.Deepa C. N, Department of Biochemistry

Deepa C. N

7. Dr.M.B. Pavithra, Department of HR&DE

M.B. Pavithra

8. Dr.D. Menaka, Department of CN &D

D. Menaka

9. Mrs.C.Jayashree, Department of Economics

C. Jayashree

A ECRIC Committee meeting was held on the 21st November 2020 chaired by Dr. Uma Gowrie, Dean of Research Aided Stream. The ECRIC Committee members were asked to attend the meeting.

Dr. Uma welcomed all the members and thanked them for attending the meeting even though it was a Saturday. She said that an online meeting with Trust board members, Principal, Vice principal Deans of Research and a few department Heads was conducted on 22nd October and the 10 points charter had been discussed. Also it was suggested in that meeting that, student representatives from PG, M. Phil and Ph. D should be included in the ECRIC meetings. Dr. Uma asked the ECRIC Committee members to identify one Research student from their respective departments, so that if any information is needed from students community, it can be done through these representatives. She also asked the ECRIC committee members to give valuable suggestions regarding the 10 points charter through whatsapp or mail by Monday the 23rd November 2020.

Dr. Uma allocated the members a few departments for easy functioning of Research work. In day college, the no. of departments is 12. In Self supporting stream the no. of departments is 24 including MBA and MCA. The following is the list of Departments allotted to the ECRIC members.

S. No	Name of the Member	Departments allotted
1.	Dr. Saranya	Commerce, Corporate Secretaryship and N& D
2.	Dr. Uma Gowrie	PBPB (Aided and S. S), Zoology, History
3.	Dr. Sudha Parimala	Chemistry, Physics and English
4.	Mrs. C. Jayashree	Economics, languages and Mathematics
5.	Dr. Hilda Stanley	Math and Math with CA
6.	Dr. Krishna Prema	Micro Biology, Vis Com
7.	Dr. Deepa	Bio Chemistry, Phy(eve), Psychology, Comp. Sci., BCA
8.	Dr. Pavithra	HR & DE, MA Journalism, Languages, English
9.	Dr. Menaka	C. N & D, MBA, MCA
10.	Dr. Sudheshna	Commerce, Corporate Secretaryship, Commerce (Hons), BBA, BBM, Accounting & Finance

Dr. Sudha Parimala said that it would be easier if from each department one faculty is willing to work for ECRIC and also she added that many teachers are willing to become a member of ECRIC. Dr. Uma replied that if the members are more, then the work would become complicated. Dr. Sudha said that being a research department, English department needs a person to represent their queries. Dr. Uma said that not only English department is a research department, but also Zoology, Physics and so on, therefore at present there is no need to expand ECRIC committee, after getting suggestions from Principal and Vice Principals regarding how many faculty and student representatives should be members in the ECRIC Committee, we would like to act according to it. She added that each and every department should have a Research club and one faculty member should be made representative for that club. From the Club representatives, information could be collected by the ECRIC Committee members.

Dr. Sudha Parimala said that when you want Innovation, when you want creativity, you would have bigger horizon if the number of members is more and you would have more ideas. Dr. Uma said that without the consent of the higher authorities, inclusion of new members in the ECRIC Committee cannot be done.

Whatever be the NAAC requirements or IQAC requirements, the concerned members should collect the information from the allotted departments and it should be sent to Deanofresearch mail. The deans will compile the details and hand over it to NAAC and IQAC. This will help the deans to have a database of all the research activities of our college. In IQAC, they have appointed a person exclusively for their work, where as in research work, we do not have any attendant to do the compilation and typing work. The deans will be link persons between IQAC and ECRIC committee.

Dr. Uma asked about the committee members suggestions regarding 10 points charter, paper publications, reimbursement of fee. Dr. Sudha parimala said, " Agenda 66 in the 10 points charter says that the publication fee amount would be reimbursed". She asked about the conditions to get reimbursement for publishing the articles in UGC CARE list journals and Scopus indexed journals. She wants to know whether the impact factor should be greater than 5 and she also wants to know whether there is any limit for the reimbursement. Dr. Uma said that getting impact factor 1 and 2 is very big thing. If you have a letter of acceptance for possible publication, a letter from the faculty is needed for reimbursement. Dr. Uma said that she had to find out from the Trust members regarding this reimbursement in the next meeting. Dr. Sudha said, " Agenda 67 says that Faculty and students are encouraged to do summer projects and almost all PG departments are having projects and the students are spending a lot of money. Will this project be considered as Summer project and will they be getting fund from ECRIC" . Dr. Uma said that after completion of project the students cannot claim fund for their expenditure, but the summer project in the 10 point charter can be replaced by students project which they are doing in the final semester.

Dr. Sudha parimala said that the instrumentation center should start working. Dr. Uma said that the Incharge is retired. Dr. Menaka said, "by December 15th, we have to finish the compilation work for Criterion 3 and for proof collection, Google forms should be filled up". Dr. Uma said, "In the Google drive, the forms should be created and filled up and anything is to be added, that can be done by Dr. Menaka". She also said, ' Pavithra is allotted 3.5 and 3.7, Dr. Hilda will help Dr. Pavithra in her work".

3.1 is given to krishna Prema , 3.2- Dr. Saranya, 3.3 - Menaka, 3.4- Dr. Uma and Dr. Sudha, 3.6- Deepa, Sudheshna . Management funded project for staff members - are they going to revive?- Dr. Saranya.

Dr. Uma said that the Trust members gave consent to that project and we could do that from January to December and the amount also had been increased from 15,000 to 25, 000.

Extension for this year project is given to the faculty who could not finish it in time. Dr. Menaka asked whether reimbursement for online Workshops, and international Seminar would be given. Finally Dr. Uma thanked all the members for sharing their valuable time.

The members attended:

Dr. Uma Gowrie, Dean of Research, (Aided)

Dr. Hilda Stanley, Dean of Research, (S.S)

Dr. Saranya, Head, Department of Commerce, (Aided)

Dr. Sudha Parimala, Department of Chemistry, (Aided)

Dr. Deepa, Department of Bio Chemistry, (S.S)

Dr. Sudheshna, Department of Commerce, (S.S)

Dr. Pavithra, Department of human Rights and Duties Education, (S.S)

Dr. Menaka Department of Clinical Nutrition and Dietetics, (S.S)

Mrs. C. Jayashree, Department of Economics, (Aided)

S. Menaka
Stanley
Sudha
Deepa
Sudheshna
Pavithra
Menaka



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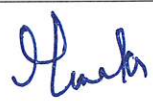


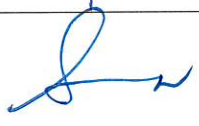



Minutes of ECRIC Committee (Ethiraj Centre for Research, Innovation and Creativity) meeting held on 30th July, 2019 at 1:00 pm to 3:00 pm at Board room, Ethiraj College for Women, Chennai.

The following agenda were discussed.

1. Research Policy was finalized
2. Format of Operational Guidelines released by UGC in JULY 2019 with respect to STRIDE (Scheme for Trans-disciplinary Research for India's Developing Economy) was give to the members in-charge of framing guidelines for Major/Minor projects.
3. Requirements for starting an incubation centre in college was discussed by the two committee members in-charge of the same – Dr. M. Menaka and Ms T. Sudesna (Former E-cell Co-ordinator SS).
4. Need for modification of Criteria for deciding Research Excellence Award given on Founders day was discussed. The suggestions are -
 - a. Application for the research excellence award to be sent by mail to IQAC and submission of copies supporting documents to be handed over to IQAC who are responsible for calculating the points for grant of the Award.
 - b. Self-Supporting faculty have restrictions with respect to securing grants for research projects and therefore for research publications. They are eligible to apply only for UGC Minor Projects.
 - c. Out off 25 Self-Supporting department only three have M.Phil recognition and One department has Ph.D. recognition. This makes it difficult for the Self-Supporting faculty to Publish research papers without having research scholars. Therefore the minimum cut-off points as per API guidelines for SS faculty need not be mandated.
 - d. As per API guidelines the calculation of points is different for science stream Faculty and humanities and arts stream faculty. Therefore it is suggested that research excellence awards be given separately totalling to four, two each for Aided and Self-Supporting streams.
5. NAAC Criteria III (3.1 to 3.7) were allocated to the ECRIC committee members after discussion.

Members present

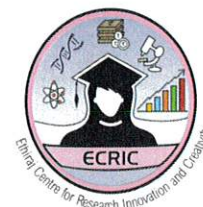
<p>Dr. S. Uma Gowrie Associate professor Department of Plant Biology and Plant Biotechnology Ethiraj College for Women</p>	Member	
<p>Ms. C. Jayashree Assistant professor Department of Economics Ethiraj College for Women</p>	Member	
<p>Dr. C. N. Deepa Associate professor Department of Biochemistry Ethiraj College for Women</p>	Member	
<p>Dr. M. Menaka Associate professor Department of Clinical Nutrition and Dietetics Ethiraj College for Women</p>	Member	
<p>Ms.V.R. Shirley Grace Assistant professor Department of Human Rights and Duties Education Ethiraj College for Women</p>	Member	
<p>Dr. M. B. Pavithra Associate professor Department of Human Rights and Duties Education Ethiraj College for Women</p>	Member	
<p>Dr. A.S.Saranya Associate professor and Head, Department of Commerce Ethiraj College for Women</p>	Dean of Research (Aided)	
<p>Dr. K. Krishna Prema Associate professor and Head Department of Microbiology Ethiraj College for Women</p>	Dean of Research (SS)	



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Minutes of ECRIC Committee (Ethiraj Centre for Research, Innovation and Creativity) meeting held on 24th July, 2019 at 1:00 pm at Board room, Ethiraj College for Women, Chennai.

The Deans of Research welcomed and briefed the ECRIC committee members on the background for formation of ECRIC and the road ahead in order to achieve the Vision of the management to make Ethiraj College a Centre for Research Excellence.

Eight Faculty members representing Aided and Self Supporting Streams volunteered to form the ECRIC committee along with the two deans of Research (enclosed).

The following were discussed.

1. Recommendations to enhance research submitted to the management on 01.02.2019 were briefed based on which the suggestions were -

- a. On a priority basis, two more lab technicians to operate high-end equipment in the FIST Centre and Instrumentation Centre are required urgently.
- b. A single hall hosting all the Equipments has to be provided for better monitoring of the Equipments.

2. Subgroups were formed to frame Guidelines for the following to be submitted in the next meeting

- a. Research Policy
- b. Minor/Major Research Projects
- c. Kothari Research Fellowships
- d. Startups and incubation Centre

The next meeting was scheduled on 30.07.19.

Members present

<p>Dr. S. Sudha Parimala Associate professor Department of Chemistry Ethiraj College for Women</p>	<p>Member</p>	
<p>Dr. C. N. Deepa Associate professor Department of Biochemistry Ethiraj College for Women</p>	<p>Member</p>	
<p>Dr. M. Menaka Associate professor Department of Clinical Nutrition and Dietetics Ethiraj College for Women</p>	<p>Member</p>	
<p>Ms.V.R. Shirley Grace Assistant professor Department of Human Rights and Duties Education Ethiraj College for Women</p>	<p>Member</p>	
<p>Dr. M. B. Pavithra Associate professor Department of Human Rights and Duties Education Ethiraj College for Women</p>	<p>Member</p>	
<p>Dr. A.S.Saranya Associate professor and Head, Department of Commerce Ethiraj College for Women</p>	<p>Dean of Research (Aided)</p>	
<p>Dr. K. Krishna Prema Associate professor and Head Department of Microbiology Ethiraj College for Women</p>	<p>Dean of Research (SS)</p>	

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3.4.1

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1 Endophytic bacteria associated with an ethnomedicinal plant *Cissus quadrangularis* Linn. – A promising alternative source of bioactive metabolites

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Thesis submitted to the University of Madras in partial fulfillment of the Degree of DOCTOR OF PHILOSOPHY (Ph.D.) in MICROBIOLOGY- PLANT BIOLOGY AND PLANT BIOTECHNOLOGY INTERDISCIPLINARY By Mrs. PARVIN ZEENATH ANWAR, M.Sc., M.Phil. Under the guidance of Dr. Mrs. S. UMA GOWRIE, M.Sc., M.Phil., Ph.D.

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DEPARTMENT OF PLANT BIOLOGY AND PLANT BIOTECHNOLOGY ETHIRAJ COLLEGE FOR WOMEN (AUTONOMOUS).

Affiliated to the University of Madras, Chennai – 600 008, Tamil Nadu, India, JUNE – 2021

2.1 INTRODUCTION Plants and microorganisms are excellent and rich sources of valuable natural compounds. Natural products from plant and microorganisms possess a wide range of biological activities and are structurally and chemically diverse. Novel bioactive compounds from plants and microorganisms find great potential in medical, agricultural, drug discovery and industrial sectors. Natural bioactive compounds harnessed from biological sources serve as therapeutics which include (but are not limited to) antimicrobial, antioxidants and anticancer agents (Demain, 2014; Chandra et al., 2020). Although plant sources are being largely explored for unearthing of new biologically active chemical compounds, microorganisms are worthwhile in the search for natural bioactive compounds as they can be grown under controlled conditions at a faster rate and is suitable for unhindered large-scale production. Microorganisms also serve as an environment friendly alternative to conserve plant resources (Pham et al., 2019). Bioactive compounds synthesized by microbes are more convenient for use than that of plants. Production of bioactive compounds by the plants suffers problems like heterogeneous quality and insufficient level of productivity. Microorganisms yield primary and secondary metabolites under controlled environmental conditions assuring their maximum efficiency in uniformity and high quality (Sato & Kumagai, 2013). Bioactive compounds such as secondary metabolites synthesized by microorganisms have been extensively used as pharmaceuticals (Elander, 2003; Erdo, 2010; Yoon et al., 2004) as well as in the manufacturing process of therapeutic products (Kirk et al., 2002; Merino & Cherry 2007). Microorganisms are ubiquitous and they are present almost in all living as well as non-living things. Among the biotic factors, plants are a suitable niche for microorganisms. Microorganisms may occupy the surface of the plant as epiphytes or may inhabit intercellularly or intracellularly. The microorganisms that reside within the plants are known as endophytes. Endophytes are closely associated to their respective host plants than the epiphytes or soil microorganisms. Endophytes can be defined as microorganisms that colonize the inner healthy plant tissues and establishes

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for all or part of their life cycle without causing any

disease symptoms (Wilson, 1995). The interaction of the endophyte with the plant is different from pathogen-plant host interaction, in that it is symptomless and non-disease producing. The endophyte-plant host interaction ranges from neutralism, mutualism to that of commensalism (Stone et al., 2000). Endophytes are protected in the

3 plant's interior from exposure to extreme environmental conditions such as temperature, osmotic potentials and ultraviolet radiation, with little competition from other microorganisms for a constant and reliable source of nutrition. Microbial endophytes in turn contribute to the health of host plant or increase resistance against the plant pathogens by producing wide range of bioactive compounds (Lam, 2007). As a result of these long-held associations, it is hypothetical to conceptualize that some of these endophytes may have devised genetic systems allowing for the transfer of information between themselves and the host plant and vice versa (Stierle et al., 1993). Endophytes are now considered as an important part of biodiversity. Endophytes are an important source of precious bioactive compounds and secondary metabolites that contribute to more than 80 % of the natural drugs available in the market (Singh & Dubey, 2015). Many of