INSTITUTION INTEGRATES CROSSCUTTING ISSUES RELEVANT TO ENVIRONMENT AND SUSTAINABILITY

INSTITUTION INTEGRATES CROSS CUTTING ISSUES RELEVANT TO ENVIRONMENT & SUSTAINABILITY

Academic Year 2022-2023

Sr. No.	Particulars
1	Environmental sciences syllabus
2	Herbal drug technology theory syllabus
3	Herbal drug technology practical syllabus
4	Pharmacognosy and phytochemistry I theory syllabus
5	Pharmacognosy and phytochemistry I practical syllabus
6	Clean and Green Campus Initiatives
7	Water conservation management
8	Medicinal plant garden species list
9	Ewaste management
10	Alternate source of energy

ENVIRONMENTAL SCIENCES SYLLABUS

BP 206 T. ENVIRONMENTAL SCIENCES (Theory) 30 hours

Scope: Environmental Sciences is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.

Objectives: Upon completion of the course the student shall be able to**:**

1. Create the awareness about environmental problems among learners.
2. Impart basic knowledge about the environment and its allied problems.
3. Develop an attitude of concern for the environment.
4. Motivate learner to participate in environment protection and environment improvement.
5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.
6. Strive to attain harmony with Nature.

COURSE CONTENT

Unit-I

The Multidisciplinary nature of environmental studies Natural Resources Renewable and non-renewable resources:

10hours

Natural resources and associated problems

a) Forest resources; b) Water resources; c) Mineral resources; d) Food resources; e) Energy resources; f) Land resources: Role of an individual in conservation of natural resources

Unit-II

Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.

10hours

- Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit- III

10 hours

Environmental Pollution: Air pollution; Water pollution; Soil pollution

Recommended Books:

1. Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Pu blishing Pvt. Ltd., Ahmedabad – 380 013, India,
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
5. Clark R.S., Marine Pollution, Clanderson Press Oxford
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down of Earth, Centre for Science and Environment

HERBAL DRUG TECHNOLOGY
THEORY SYLLABUS

2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata McGraw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A.K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The Point LippincottWilliams &Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology
6. K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers MedicalPublishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R.Craig & Robert,
9. N.Udupa and P.D. Gupta, Concepts in Chronopharmacology.

BP 603 T. HERBAL DRUG TECHNOLOGY (Theory)

Scope: This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs

Objectives: Upon completion of this course the student should be able to:

1. understand raw material as source of herbal drugs from cultivation to herbal drug product
2. know the WHO and ICH guidelines for evaluation of herbal drugs
3. know the herbal cosmetics, natural sweeteners, nutraceuticals
4. appreciate patenting of herbal drugs, GMP .

Course content:

UNIT-I **11 Hours**

Herbs as raw materials

Definition of herb, herbal medicine, herbal medicinal product, herbal drug preparation Source of Herbs Selection, identification and authentication of herbal materials Processing of herbal raw material

Biodynamic Agriculture

Good agricultural practices in cultivation of medicinal plants including Organic farming.

Pest and Pest management in medicinal plants: Biopesticides/Bioinsecticides.

Indian Systems of Medicine

a) Basic principles involved in Ayurveda, Siddha, Unani and Homeopathy

b) Preparation and standardization of Ayurvedic formulations viz Aristas and Asawas, Ghutika,Churna, Lehya and Bhasma.

Pharmacognosy in various systems of medicine:

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.

UNIT-II **7 Hours**

Nutraceuticals

General aspects, Market, growth, scope and types of products available in the market. Health benefits and role of Nutraceuticals in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastro intestinal diseases.

Study of following herbs as health food: Alfaalfa, Chicory, Ginger, Fenugreek, Garlic,Honey, Amla, Ginseng, Ashwagandha, Spirulina

Study of Omega-3-polyunsaturated fatty acids, Dietary fibers, Carotenoids, proanthocyanidins, and Resveratrol

Herbal-Drug and Herb-Food Interactions: General introduction to interaction and classification. Study of following drugs and their possible side effects and interactions: Hypercium, kava-kava, Ginkobiloba, Ginseng, Garlic, Pepper & Ephedra

UNIT-III **10 Hours**

Herbal Cosmetics

Market overview, ,Sources and description of raw materials of herbal origin used via, fixed oils, waxes, gums colours, perfumes, protective agents, bleaching agents, antioxidants in products such as skin care, hair care and oral hygiene products.

Herbal excipients:

Market overview , Herbal Excipients – Significance of substances of natural origin as excipients – colorants, sweeteners, binders, diluents, viscosity builders, disintegrants, flavors & perfumes.

Herbal formulations :

Market overview, Conventional herbal formulations like syrups, mixtures and tablets and Novel dosage forms like phytosomes

UNIT- IV **12 Hours**

Evaluation of Drugs WHO & ICH guidelines for the assessment of herbal drugs Stability testing of herbal drugs.

Patenting and Regulatory requirements of natural products:

a) Definition of the terms: Patent, IPR, Farmers right, Breeder's right, Bioprospecting and Biopiracy

b) Patenting aspects of Traditional Knowledge and Natural Products. Case study of Curcuma & Neem.

Regulatory Issues - Regulations in India (ASU DTAB, ASU DCC), Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.

Other issues related to export of natural products (such as CITES Certificate, DGFT Notification, Negative list of herbs, TRAFFIC)

UNIT-V **05Hours**

General Introduction to Herbal Industry

- Herbal drugs industry: Present scope and future prospects.
- A brief account of plant based industries and institutions involved in work on medicinal and aromatic plants in India.

S**chedule T – GoodManufacturing Practice of Indian systems of medicine**

HERBAL DRUG TECHNOLOGY PRACTICAL SYLLABUS

*Experiments are demonstrated by simulated experiments/videos

Recommended Books (Latest Editions)

1. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
2. Kulkarni SK. Handbook of experimental pharmacology. Vallabh Prakashan.
3. Goyal RK. Practicals in Pharmacology, BS Shaha Prakashan.
4. Kasture SB. A handbook of experiments in pre-clinical pharmacology, Career Publications.
5. Bikas Medhi, Ajay Prakash. Practical Manual of Experimental and Clinical Pharmacology. Jaypee Publications.

BP 609 P. HERBAL DRUG TECHNOLOGY (Practical) 4 hours/ week

1. To perform preliminary phytochemical screening of crude drugs.
2. Determination of the alcohol content of Asava and Arista
3. Evaluation of excipients of natural origin
4. Incorporation of prepared and standardized extract in cosmetic formulations like creams,lotions and shampoos and their evaluation.
5. Incorporation of prepared and standardized extract in formulations like syrups, mixtures and tablets and their evaluation as per Pharmacopoeial requirements.
6. Monograph analysis of herbal drugs from recent Pharmacopoeias
7. Determination of Aldehyde content
8. Determination of Phenol content
9. Determination of total alkaloids

Recommended Books: (Latest Editions)

1. Textbook of Pharmacognosy by Trease & Evans.
2. Textbook of Pharmacognosy by Tyler, Brady & Robber.
3. Pharmacognosy by Kokate, Purohit and Gokhale
4. Essential of Pharmacognosy by Dr.S.H.Ansari
5. Pharmacognosy & Phytochemistry by V.D.Rangari
6. Pharmacopoeal standards for Ayurvedic Formulation (Council of Research in

॥ पढमं नाणं तओ दया ॥
Est.1927
Shri Jain Vidya Prasarak Mandal's
Rasiklal M. Dhariwal Institute of Pharmaceutical Education & Research
[Formerly Shri Fattechand Jain College of Pharmacy (B.Pharm.)]
Approved by PCI, AICTE, New Delhi, DTE Code : PH-6823 & Affiliated to Savitribai Phule Pune University (PU/PN/Pharm/448/2014)
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PHARMACOGNOSY AND PHYTOCHEMISTRY I THEORY & PRACTICAL SYLLABUS

Acharya Anand Rushiji Marg, Telco Road, D-2, 60-61, Chinchwad Station, Pune - 411 019.
Ph.: 020-27459191 Fax No. 020 - 27354633 | Email : rmdiper@gmail.com

BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I (Theory) - 45 Hours

Scope: The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.

Objectives: Upon completion of the course, the student shall be able

1. to know the techniques in the cultivation and production of crude drugs
2. to know the crude drugs, their uses and chemical nature
3. know the evaluation techniques for the herbal drugs
4. to carry out the microscopic and morphological evaluation of crude drugs

COURSE CONTENT — **45 Hours**

UNIT-I

Introduction to Pharmacognosy:

(a) Definition, history, scope and development of Pharmacognosy

(b) Sources of Drugs – Plants, Animals, Marine & Tissue culture

(c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum -resins).

Classification of drugs:

Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs — **10 Hours**

Quality control of Drugs of Natural Origin:

Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.

Quantitative microscopy of crude drugs including lycopodium spore method, leaf constants, camera lucida and diagrams of microscopic objects to scale with camera lucida.

UNIT-II

Cultivation, Collection, Processing and storage of drugs of natural origin:

Cultivation and Collection of drugs of natural origin

Factors influencing cultivation of medicinal plants. — **10 Hours**

Plant hormones and their applications.

Polyploidy, mutation and hybridization with reference to medicinal plants

Conservation of medicinal plants

UNIT-III

Plant tissue culture:

Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance. — **07 Hours**

Applications of plant tissue culture in pharmacognosy.

Edible vaccines

UNIT-IV

Plant description, morphology and anatomy:

Leaves, Roots, Barks, Wood, Flowers, Fruits, Seeds, subterranean organs

10 Hours

Introduction to secondary metabolites:

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins

UNIT-V

Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs

Plant Products:

Fibers - Cotton, Jute, Hemp

Hallucinogens, Teratogens, Natural allergens

Primary metabolites: General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primary metabolites:

08 Hours

Carbohydrates: Acacia, Agar, Tragacanth, Honey

Proteins and Enzymes: Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin).

Lipids (Waxes, fats, fixed oils): General methods of extraction of lipids.

Castor oil, Chaulmoogra oil, Shark liver oil and Cod liver oil, Wool Fat, Bees Wax

Marine Drugs:

Novel medicinal agents from marine sources a) Cardiovascular agents and b) Anti cancer agents

BP408 P. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Practical): 4Hrs/week

1. Analysis of crude drugs by chemical tests:
   (i)Tragaccanth (ii) Acacia (iii) Agar (iv) Gelatin (v) starch (vi) Honey (vii) Castor oil
2. Determination of stomatal number and index
3. Determination of vein islet number, vein islet termination and paliside ratio
4. Determination of size of starch grains, calcium oxalate crystals by eye piece micrometer
5. Determination of Fiber length and width
6. Determination of number of starch grains by Lycopodium spore method
7. Determination of Ash value
8. Determination of Extractive values of crude drugs
9. Determination of moisture content of crude drugs
10. Determination of swelling index and foaming

Recommended Books:

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009.
2. Tyler, V.E., Brady, L.R. and Robbers, J.E., Pharmacognosy, 9th Edn., Lea and Febiger, Philadelphia, 1988.
3. Text Book of Pharmacognosy by T.E. Wallis
4. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
5. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
6. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.
7. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
8. Practical Pharmacognosy: C.K. Kokate, Purohit, Gokhlae
9. Anatomy of Crude Drugs byM.A. Iyengar

CLEAN AND GREEN CAMPUS INITIATIVES

1. Greenery in the campus premise –

Landscaping of the college is worth seeing and reflects aesthetic sense of the campus. The lawns and the trees provided shade and beautiful ambience to make the environment pollution free to safeguard of all the inmates. Utmost care is taken to develop and maintain green landscaping by trained gardener and supervisor. Medicinal Garden having various medicinal plants like trees, shrub and herbs are useful in the practical classes of Pharmacognosy and Herbal Drug Technology. This well-developed medicinal plant garden provides a strong impetus for herbal drug research and to impart training to the graduate students. It supplies crude raw material and fresh plant specimens essential to carry out herbal drug and natural product-related research by the graduate students of Institute. Students use the botanical garden to collect the herbs for their routine practical work as well as for their research work during their project. Students collect the plant parts based on their project need to prepare extract and isolate the important phytoconstituents with therapeutic importance. The collection of plants is also useful to prepare herbarium specimens by undergraduate students.

Trees at entrance of the RMDIPER college gate

Landscaping near

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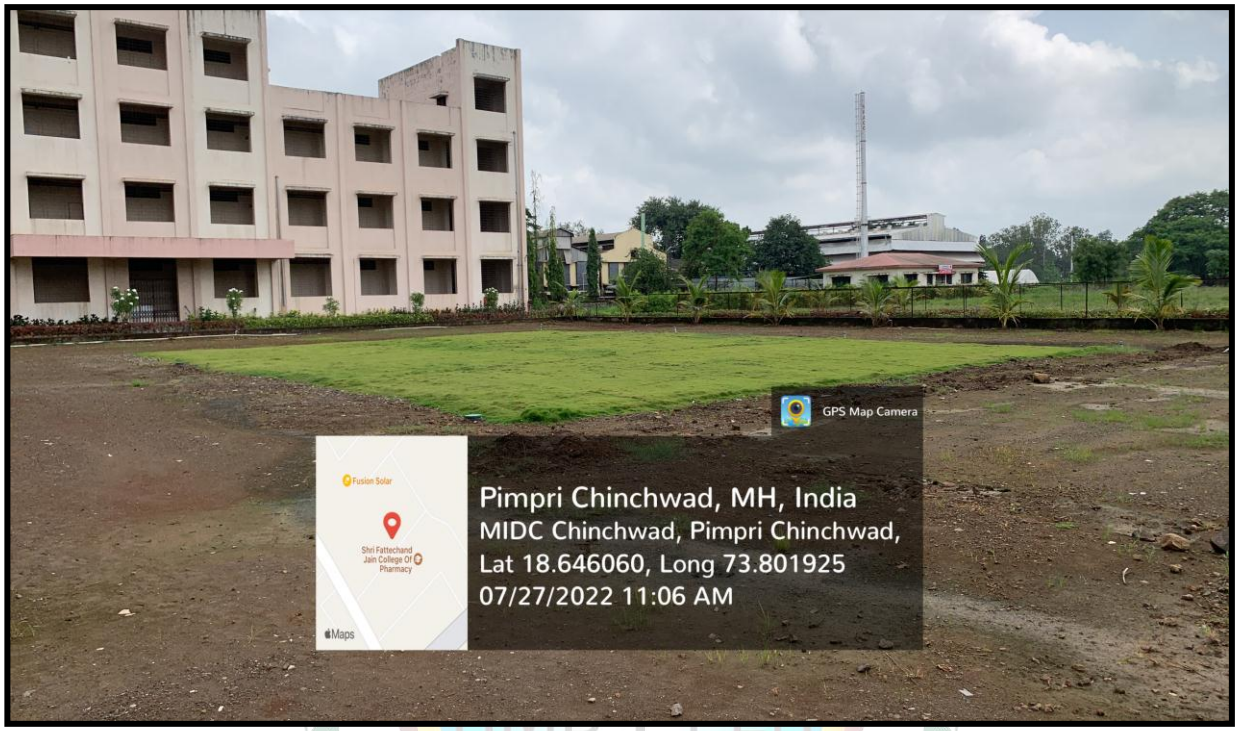
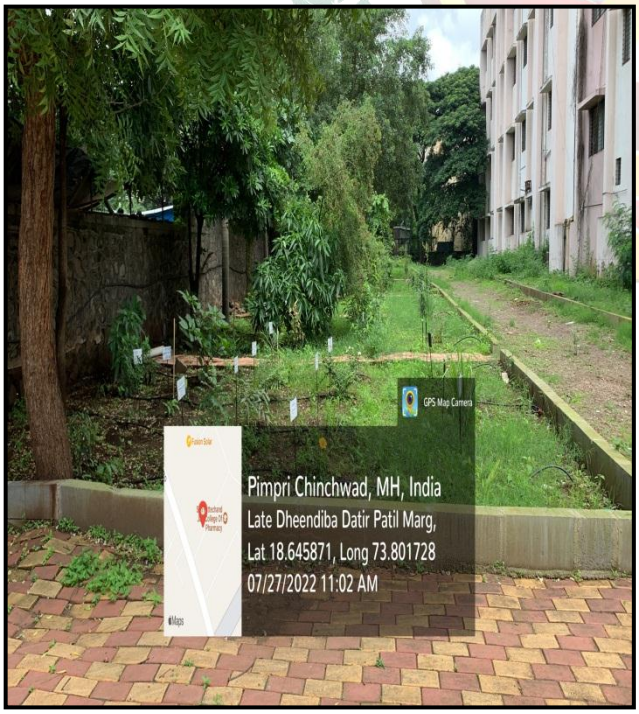
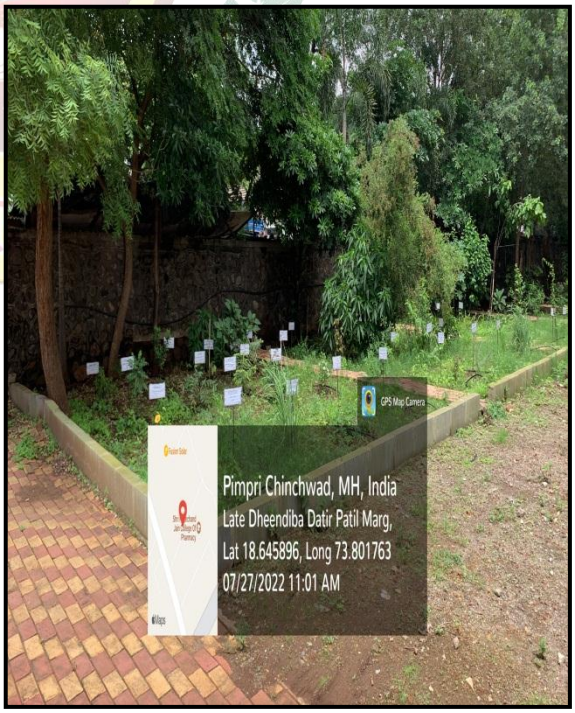
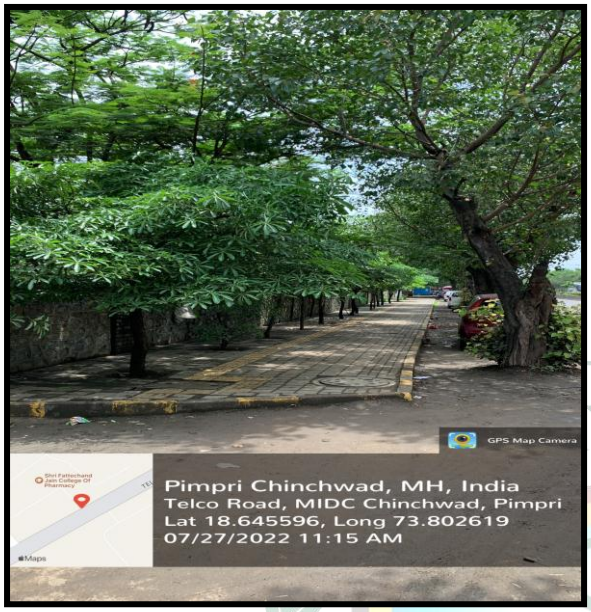
Green Lawn in Campus







Medicinal garden



Trees outside the campus gate

Plantation either side of pavement

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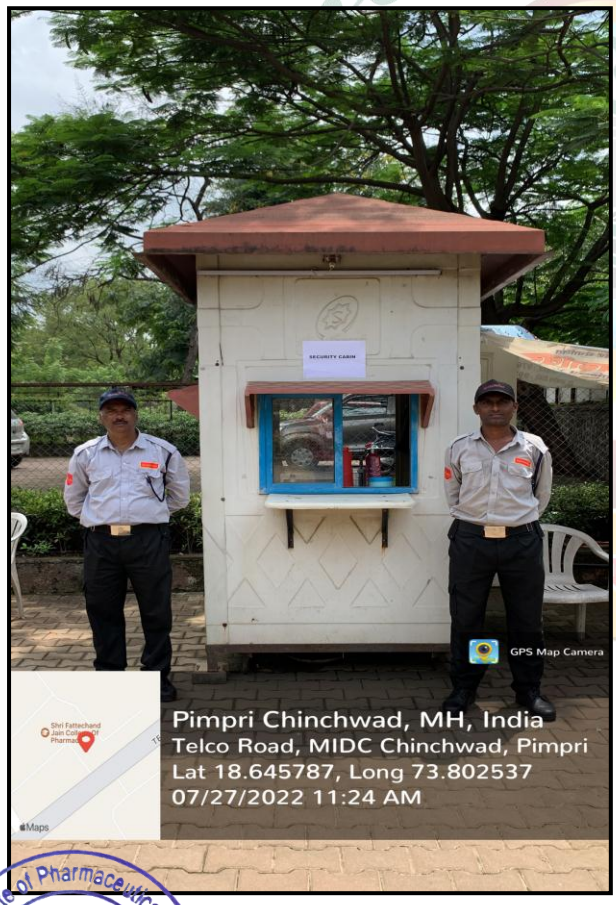
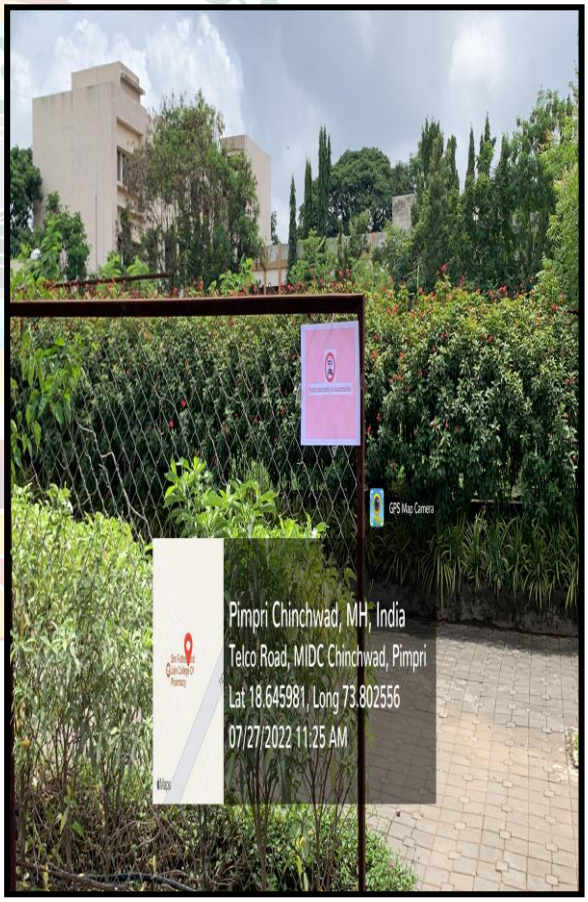
2. Restricted Entry of Automobiles

Our institute has implemented green eco-friendly practices, the automobiles entry into the campus is restricted and the sign boards are placed at the prominent places.

All vehicles must be parked at parked at parking area provided at the entrance. No vehicle is allowed to enter into the campus. Our campus strictly maintaining the COVID rules to check in the visitor's desk by security guards. Institute encourage to all students teaching and nonteaching staff for using bicycles to avoid environmental pollution in the campus. Many of the students used public transport provided by government based on their convenience. Students and staff coming from nearby villages also prefer bicycle as a mode of transport for attending the college .it is environmental friendly and prevents pollution

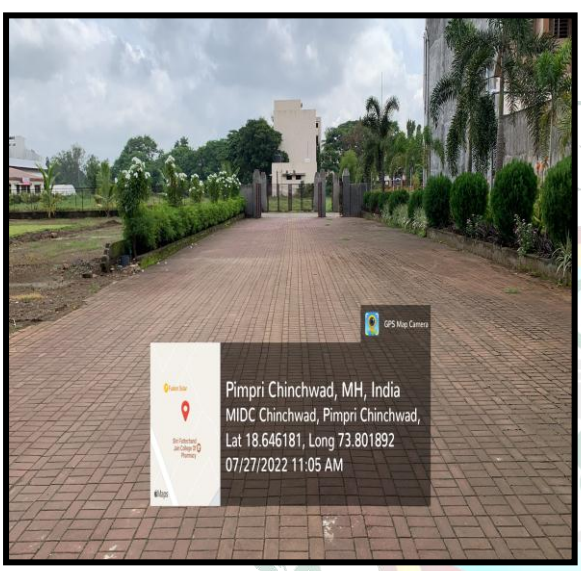


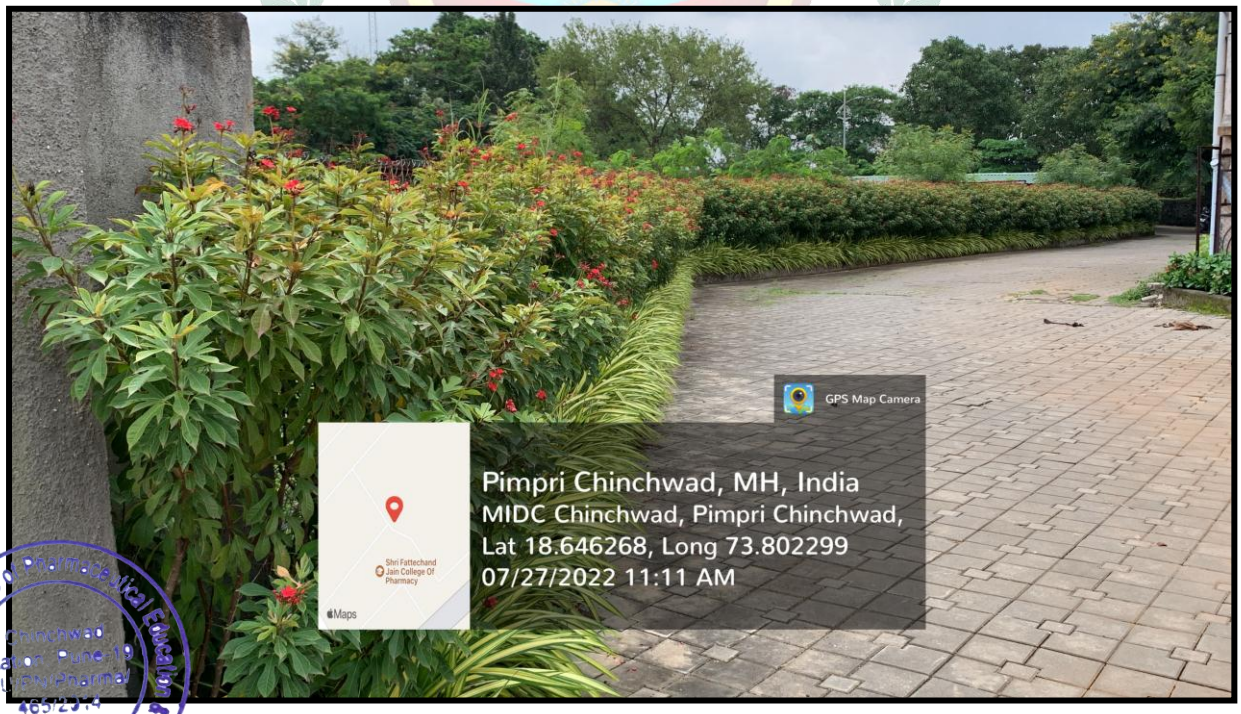


Security cabin **restricted entry to automobile in the campus**

3. Pedestrian friendly pathways

Vehicle parking space is provided at the entrance of the college campus. So as the campus is vehicle free with some expectations. Students and staff experience comfort walking through the pedestrian friendly pathways which covered with paver blocks. The internal roads are lined with trees and they are properly maintained by the campus maintenance committee.





Pedestrian friendly pathway

4. Ban on Use OF Plastic

No Single–use plastic items such as plastic bottles bags spoons straws and cups are banned completely and awareness is created among all teaching, non-teaching staff students and canteen workers through orientation and display boards in the premises. To restrict the use of plastic, measures have been taken to replace plastic cups and glasses with steel glasses in the canteen. The staff and students are informed to use steel or copper water bottles instead of plastic bottles.

Awareness of the plastic free campus by displaying posters in various places of the campus

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WATER CONSERVATION MANAGEMENT

Water Conservation Management Report

Water conservation system available in the campus -

Bore well -

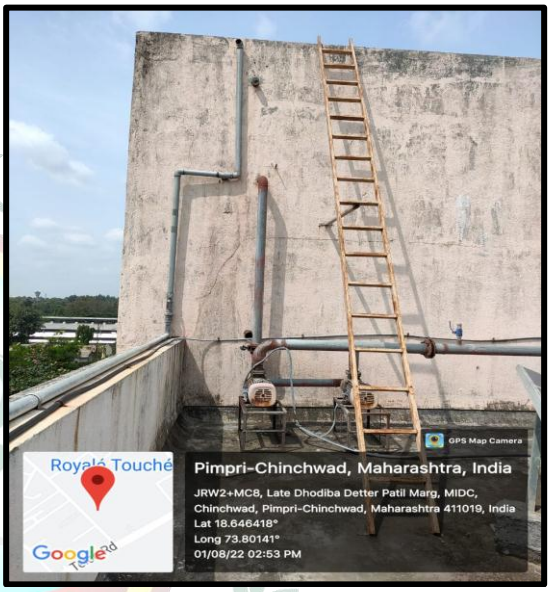
Institute has separate bore well for providing water for daily need of the campus.Boarewells are continuously replenished by constructing recharge pit. usual maintenance of the bore well is carried out by institute.

Bore well at RMDIPER

Water tank for storage of water-

For storage of regular use water and drinking water institute has constructed separate tanks for conservation of water. The maintenance of the water tank carried out regularly by third party.

Water tank for drinking water daily

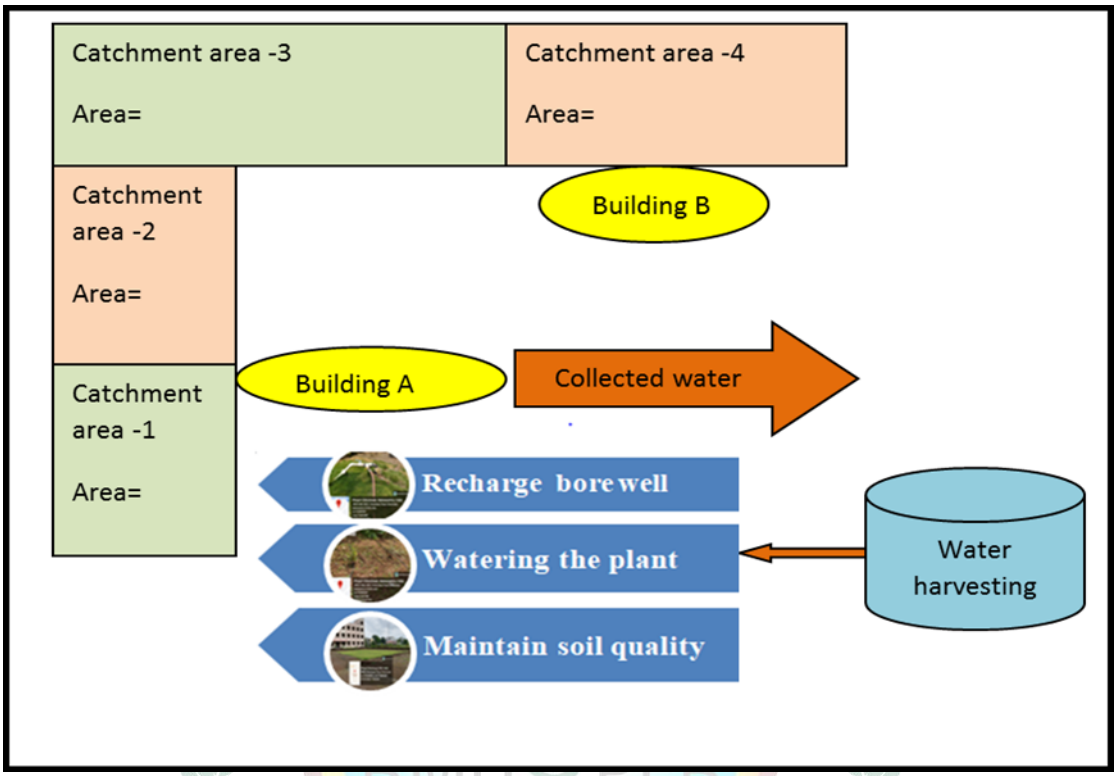


Huge tank for water use for building for needs on roof of the building

Rain water harvesting facility-

Rainwater harvesting is an important environment friendly approach. It is a Green Practice having twofold benefit of maintains the groundwater level constant. This green practice can be encouraged to protect the environment. Rainwater and run-off water, stored in a planned way, can save the earth from soil erosion and flood and recharge the aquifers to increase the groundwater level. Rainwater harvesting is eco-friendly and economical. The cost of digging a catchment area can be saved by roof-top collection of rainwater. The best part of the practice of rainwater harvesting, is that if unused, this water can be collected in natural ponds or artificial tanks and decanted to the ground thus charging the a aquifer. Institute constructed rain water harvesting plant. Institute has huge infrastructure, In rainy season abundant amount of water collected on roof top of the building. Rain water collected and passed through pipes at specific position of the roof top. All water collected in the rain water harvesting pit. Harvested water used to recharge bore well or to maintain the water level of the soil.

Schematic diagram of Water harvesting Plant in the RMDIPER



Rain Water harvesting Plant

Rain Water harvesting Plant 1& 2

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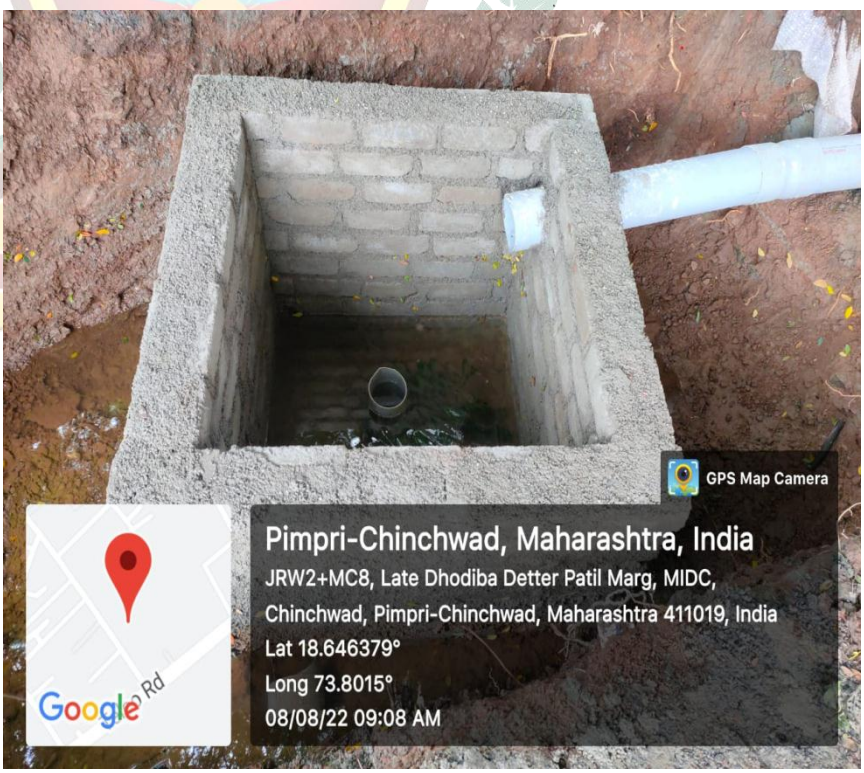

Maintenance of water bodies and distribution system in the campus - Pant Watering by water irrigation-

Pant Watering by water irrigation-

Water conservation also carried out by water irrigation process so as to save unnecessary wastage of the water.

Water irrigation facility for watering the plant

Sprinkler for watering the green lawn

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MEDICINAL PLANT GARDEN SPECIES LIST

MEDICINAL PLANTS LIST 2022-23

Sr No.	Plant Name	Biological source	Quantity
1.	Amla	Emblicaofficinalis, family Euphorbiaceae.	2
2.	Aboli	Crossandrainfundibuliform, family Acanthaceae	1
3.	Almond	Prunusamygdalus,Family Rosaceae	2
4.	Arjuna	Terminaliaarjuna Rob, family Combretaceae.	2
5.	Ashok	Polyalthia longifolia,Annonaceae	1
6.	Ashwagandha	WithaniasomniferaDunal, family Solanaceae.	1
7.	Bael	Aeglemarmelos Corr., family Rutaceae.	1
8.	Bahada	Terminaliabelerica Linn, family Combretaceae.	1
9.	Bahava	Cassia fistula,family Fabaceae	1
10.	Bamboo	Bambusa vulgaris, Poaceae	1
11.	BhumiAmla	Phyllanthusniruri, family Phyllanthaceae	1
12.	Brahmi	Centellaasiatica (L.) belonging to family Umbelliferae	1
13.	Castor	Ricinuscommunisbelonging to family Euphorbiaceae.	1
14.	Catechu	UncariagambierRoxburgh., belonging to family Rubiaceae	1
15.	Chafa	Plumeriarubraof the family Apocynaceae.	4
16.	Cinnamon	Cinnamomumzeylanicum belonging to family Lauraceae	1
17.	Chitrak	Plumbagozeylanica family Plumbaginaceae.	2
18.	Coconut	Cocosnucifera, palm tree family (Arecaceae)	1

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19.	Cotton	Gossypiumherbaceum belonging to family Malvaceae.	1
20.	Curry Leaf	Murrayakoenigii (L.) family Rutaceae	2
21.	Dalimb	PunicagranatumL.family Lythraceae	2
22.	Datura	Daturastramonium. belongs to the solanaceae family.	1
23.	Eucalyptus	Eucalyptus globulus belonging to family Myrtaceae	1
24.	Ficus	Ficus benjamina, family Moraceae,	1
25.	Ginkgo	Ginkgo biloba, belonging to family Ginkgoaceae	1
26.	Gokhru	Tribulusterrestris belonging to family Zygophyllaceae.	1
27.	Gudmar	Gymnemasylvestre, family Apocynaceae	1
28.	Guggul	Commiphoramukul belonging to family Burseraceae.	1
29.	Gulmohor	Delonixregia family Fabaceae,	2
30.	Guduchi	Tinosporacordifolia family Menispermaceae	2
31.	Gunj	Abrusprecatorius, family Fabaceae.	2
32.	Hadga	Sesbaniagrandiflora, family Fabaceae	1
33.	Tumeric	Curcuma longa Linn.belonging to family Zingiberaceae.	1
34.	Harida	Terminalia belerica Linn, belonging to family Combretaceae	1
35.	Henna	Lawsonia inermis belonging to the family-Lythraceae.	2
36.	Hibiscus	Hibiscus rosa-sinensis belonging to the family malvaceae.	5
37.	Hirvachafa	Artabotrys hexapetalus family Annonaceae	1

38.	Ixora	Ixora coccineafamily Rubiaceae.	11
39.	Jambhul	Syzygiumcumini, belonging to family Myrtaceae	2
40.	Kadamb	Neolamarckiacadamba,belonging to the Rubiaceae family.	1
41.	Kanchanvrush	Bauhinia variegatafamily, Fabaceae.	2
42.	Katesavar	Bombaxceiba, Family: Malvaceae	1
43.	Korphad	Aloe vera family iliaceae	1
44.	Lajalu	Mimosa pudica. Family - Fabaceae.	2
45.	Lemon	Citrus limon family Rutaceae,	1
46.	Long pepper	Piper longumfamily Piperaceae,	1
47.	Mango	Mangiferaindica, family Anacardiaceae.	1
48.	Mogara	Jasminumsambac family Oleaceae.	3
49.	Drumstick	Moringaoleifera family Moringaceae,	2
50.	Nagkesar	Mesuaferrea, family Calophyllaceae.	1
51.	Neem	Azadirachtaindica family Meliaceae	1
52.	Nirgudi	Vitexnegundo family Lamiaceae	2
53.	Palash	ButeamonospermaFamily - Fabaceae.	1
54.	Papaya	Carica papaya, family Caricaceae.	1
55.	Panfuti	Bryophyllumpinnatum family Crassulaceae	2
56.	Parijatak	Nyctanthes arbor-tristis,belonging to the family Oleaceae,	2
57.	Guava	Psidium guajava, family Myrtaceae	3
58.	Ratrani	Cestrum nocturnum ; Family: Solanaceae	2
59.	Rauwolfia	Rauwolfiaserpentina belonging to family Apocynaceae.	1

60.	Red flame	Spathodea campanulata family bignoniaceae	1
61.	Sag tree	Tectonagrandisfamily Lamiaceae	1
62.	Sagargota	Guilandinabonduc, Family: Fabaceae.	1
63.	Saptaparni	Alstoniascholaris, family Apocynaceae	13
64.	Shatavari	Asparagus racemosusWilld., belonging to family Liliaceae.	2
65.	Shisham	Dalbergia sissoo Family: Fabaceae	4
66.	Sitaphal	Annonareticulatafamily Annonaceae	2
67.	Stevia	Stevia rebaudiana family Asteraceae.	1
68.	Tagar	Valerianajatamansi family Valerianaceae	3
69.	Thevatia	Thevetia peruviana belonging to family Apocynaceae.	1
70.	Udumber	Ficusracemosa family Moraceae.	1
71.	Vasaka	Adhatodavasica belongs to the Acanthaceae family.	4
72.	Vinca	Catharanthusroseus belonging to family Apocynaceae.	1
73.	Vekhand	Acoruscalamusfamily Acoraceae,	1
		TOTAL	**131**

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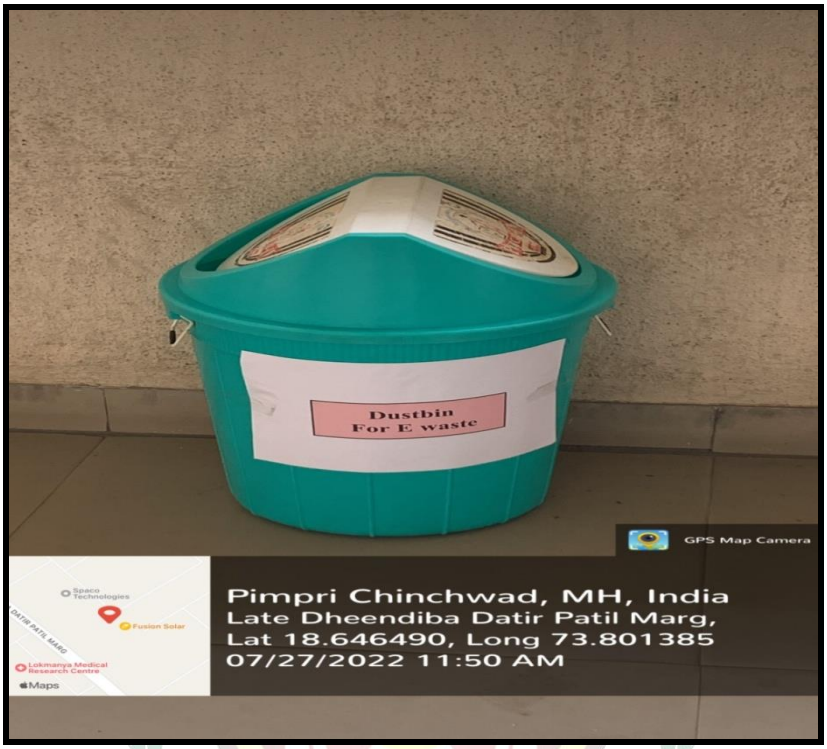
EWASTE MANAGEMENT

E-Waste Management

Non-working computers monitors and printerselectronics, batteries are collected from institute in separate e-waste dustbin and send it in management office where repair, reuse, recycling and disposable process is carried out.



Dustbin for e waste kept near store department

Management office E-waste collected for repair, reuse, recycling and disposable process

ALTERNATE SOURCE OF ENERGY

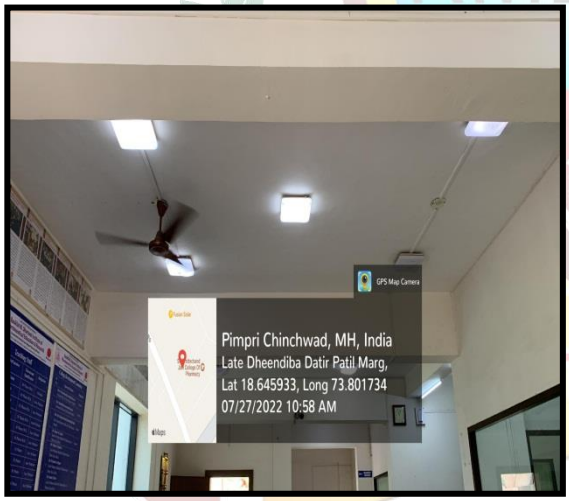
The Institution has facilities for alternate sources of energy and energy conservation measures

Alternate source of energy and energy conservation measures Report

Energy conservation important because of the economic andenvironmental benefits it offers. Conserving energy also cuts down on expanding development where natural resource extraction (such as oil or even lithium) is impacting natural areas. When we conserve energy and use it more efficiently, we directly reduce the amount of greenhouse gas emissions entering the Earth's atmosphere. With the same contest RMDIPER take precaution and necessary action for energy conservation.Following facilities provided in the campus which reduce the energy utilization of the campus

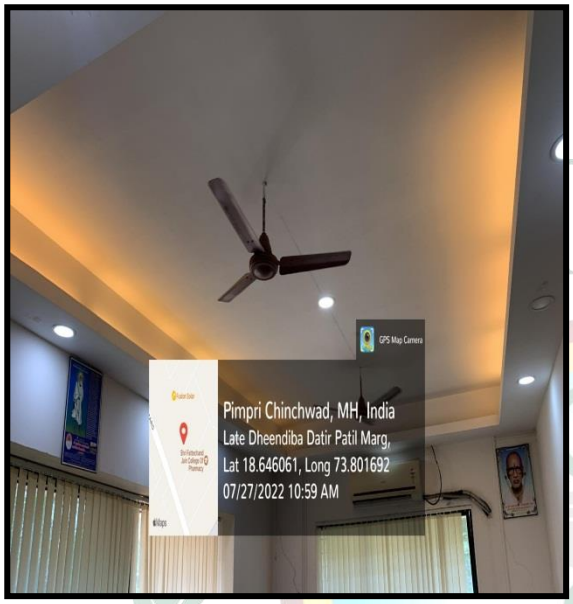
Use of LED bulbs

LED bulbs are fitted in admin office, board room, principal cabin, LED tube light in classrooms.



LED tubes in passage

LED tubes in class room



LED bulb in board room **LED bulb in admin Office**

Power efficient equipment's

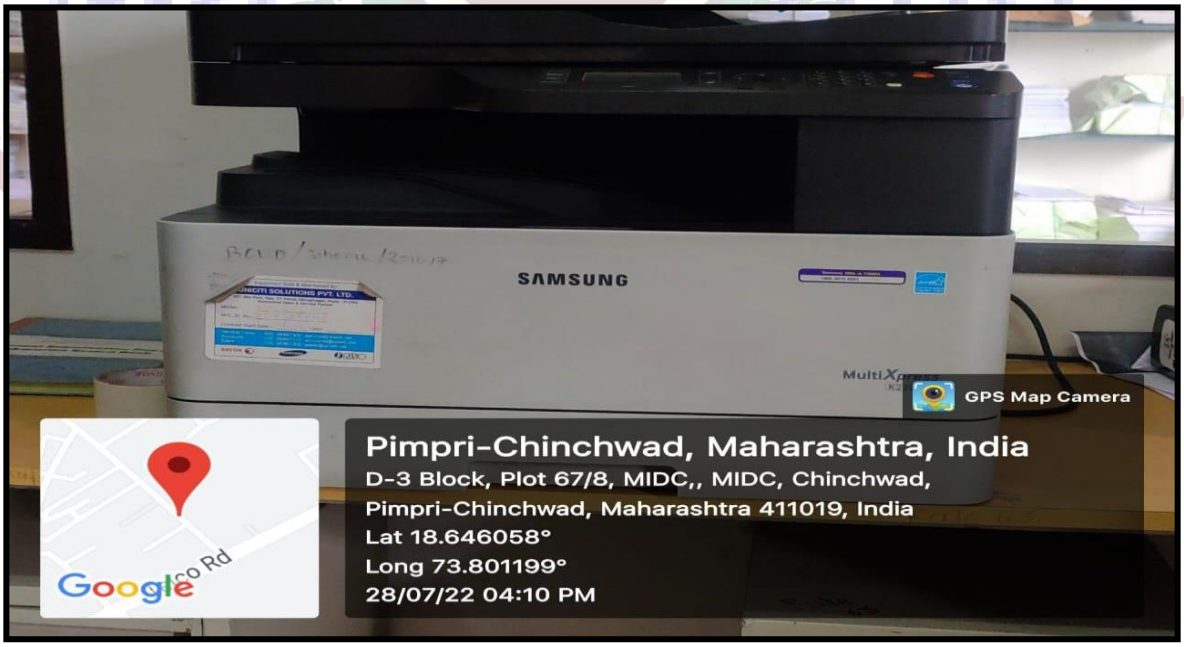
BEE Star Label is a program run by the Indian government's Bureau of Energy Efficiency under Ministry of Power that promotes energy efficiency. The program provides information on the energy consumption of products and devices using different standardized methods. RMDIPER having such energy efficient equipment includes freeze, printer, computers etc. containing following star marks.

Tentative list of power efficient equipment at RMDIPER

Sr. No	Equipment	Quantity
1.	Fridge	3
2.	Air Conditioner	3
3.	Computer	70
4.	LED Lamps AND Tubes	50
5.	Samsung Digital Copier	1

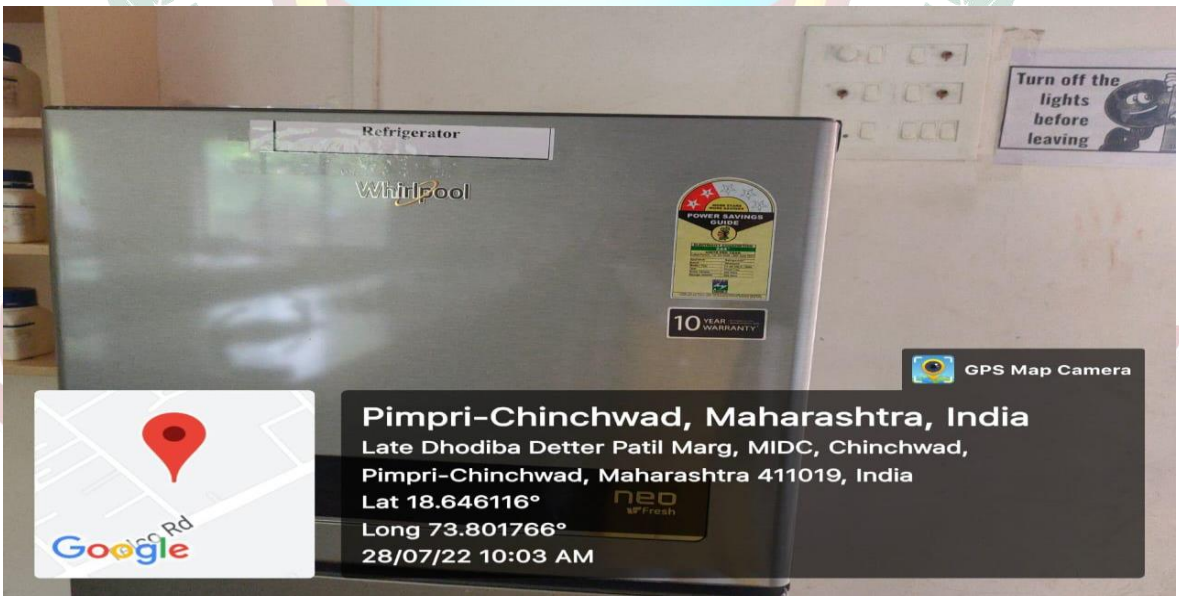
Energy efficient computers with energy star

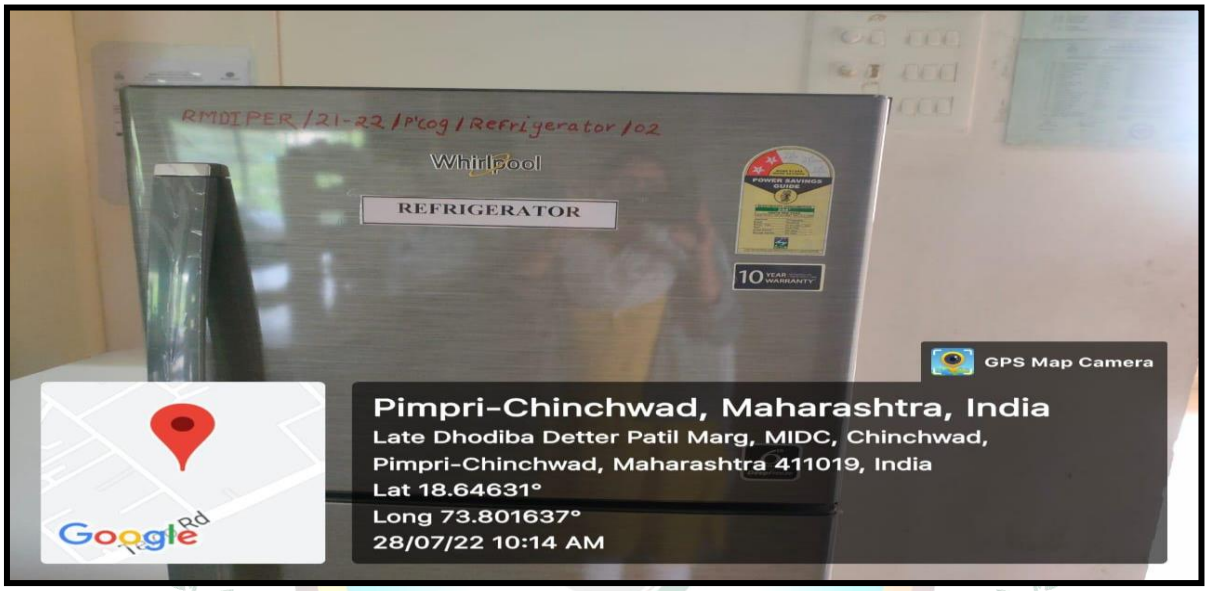
Energy efficient printer with energy star



Energy efficient Air Conditioner with power saving stars

Energy efficient freeze with power saving stars





Solar Panel

Solar power systems derive clean, pure energy from the sun. Installing solar panels in RMDIPER helps indirectly combat greenhouse gas emissions and reduces our collective dependence on fossil fuel. Traditional electricity is sourced from fossil fuels such as coal and natural gas. Solar energy is that it represents a clean, green source of energy.

Solar system at terrace of the RMDIPER

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