22BT103 IT WORKSHOP AND BIOPRODUCTS

Source : https://www.gramedia.com/pendidikan/jurusan-bioentrepreneurship/

Hours Per Week :

L	T	P	C
1	0	4	3

PREREQUISITE KNOWLEDGE: Basic idea of computer, Basics of biology.

COURSE DESCRIPTION AND OBJECTIVES:

This course deals with different IT tools and commercial bioproducts. The objective of this course is giving hands on practice on assembling and disassembling, productivity tools like Latex, word, spreadsheets and presentations and also knowledge on various bioproducts.

MODULE-1

UNIT-1 **3L+0T+12P=15 Hours**

Computer Hardware: Peripherals of a computer, components in a CPU and its functions, block diagram of the CPU.

Tools for Report writing and Presentation: Overview and Installation of Microsoft Word, Excel and PowerPoint Presentation.

UNIT-2 **5L+0T+20P=25 Hours**

Computer Hardware: Disassemble and Assemble the PC back to working condition.

Tools for Report writing and Presentation: Creating project, creating a Newsletter using Microsoft Word;Creating a Scheduler, Calculating GPA, Performance Analysis, Conditional Formatting, Charts and Pivot Tables using MS Excel; Power Point utilities and tools, Master Layouts, Design Templates, Background and textures using Power Point Presentation.

PRACTICES:

- Troubleshooting of a computer hardware.
- Assembly and disassembly of a computer.
- Creation of projects and newsletter using MS Word.
- Spreadsheet basics, modifying worksheets, formatting cells, formulas and functions, sorting and filtering, charts using MS Excel.
- Power point screen, working with slides, add content, work with text, working with tables, graphics, slide animation, reordering slides, adding sound to a presentation using MS PPT.

MODULE-2

UNIT-1 **2L+0T+8P=10 Hours**

TYPES OF BIO-PRODUCTS

Definition of bio-products, categories of bio-products, importance of bio-products, bio-products used for decoration, biofertilizers and clonal propagation of plants, Socio-economic and environmental impact of bioproducts.

SKILLS:

- ✓ *Use of computer tools in academic and project works*
- ✓ *Development of process for various bioproducts*
- ✓ *Analyse bioproducts market trend.*

UNIT-2 **6L+0T+24P=30 Hours**

BIO-MATERIALS AND BIO-FUELS

Liquid fuels-ethanol and biodiesel, solid biomass for combustion to generate heat and power, Gaseous fuel such as biogas, Bio-plastics from plantoils, Bio-rubber from latex, Bio-composites from agriculture (Ex. Hemp, flax and kenaf), Bio-fibers from flax, Biopolymers from renewable sources.

PRACTICES:

- Survey of bio-products and their market value in the last five years.
- A report on the functioning of GPS Biogas unit from food waste installed in VFSTR continuously for 15 days.
- Industrial applications of bio-plastics, bio-rubber,bio-composites and biofibers.
- Alternate energy from solid biomass: Preparation of flow chart depicting the process.

COURSE OUTCOMES:

Upon successful completion of the course, students will have the ability to:

CO No.	Course Outcomes	Blooms Level	Module No.	Mapping with POs
1	Apply the knowledge of computer hardware in troubleshooting.	Apply	1	1,3,6,7
2	Create projects and Newsletter using MS Word and LaTeX.	Create	1	3,4,7
3	Analyze various methods for the production of novel bio-products.	Analyze	2	2,4,6,7
4	Develop sustainable biomaterials from renewable sources for commercial and health benefits.	Develop	2	3,67
5	Evaluate the importance of green entrepreneurship.	Evaluate	2	3,4,7

TEXT BOOKS:

1. Peter Norton, “Introduction to Computers”, Tata Mc Graw Hill Publishers, 7th Edition, 2017.
2. N TDunford, “Food and Industrial Bioproducts and Bioprocessing”, 1st edition, Wiley-Blackwell, 2012.
3. Christoph W, James C. Liao, Sang Y. Lee, Jens N and Gregory S, “Industrial Biotechnology: ProductsandProcess”, 1st edition, Wiley, 2017.

REFERENCE BOOKS:

1. James W. Lee, “Advance Biofuels and Bioproducts”, 1stedition, Springer, 2013.
2. G. Chen, Randall J. Weselake and Stacy D. Singer, “Plant Bioproducts”, 1st edition, Springer, 2018.
3. GrahamPBunn, “Good manufacturing Practices for Pharmaceuticals”, 7th edition, Taylor & Francis, 2021.
4. Sandy Weinberg, “Good laboratory Practice regulations”, 4th edition, Taylor & Francis, 2007.