INSTITUTE	**FACULTY OF AGRICULTURE**
PROGRAM	**BACHELOR OF SCIENCE (Hons.) AGRICULTURE**
SEMESTER	**1**
COURSE TITLE	**AGRICULTURAL INFORMATICS**
COURSE CODE	**16AS0105**
COURSE CREDITS	**3**

Objective:

1 To acquire understanding of concepts, theory and application of Information & Community technology in various fields.

2 To study promoting the application of ICT in agriculture.

Course Outcomes: After completion of this course, student will be able to:

1 Student will be able to retain knowledge relevant to computer, operating systems, data base and internet.

2 Student will be able to gain information of e-Agriculture and computer models used in agriculture.

3 Students will be able to get hands on practice on crop simulation models, DSSAT/Crop-Info/Crop Syst/Wofost

4 Students will excel in using modern day computing techniques and will effectively amalgamate the knowledge to different uses in everyday life.

Pre-requisite of course: Basic knowledge about the computer science.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Introduction to computers** Introduction to computers	1
2	**Anatomy of Computers** Anatomy of Computers	1
3	**Memory concepts, Units of memory** Memory concepts, Units of memory	1
4	**Operating system, definition and types** Operating system, definition and types	1

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Contents : Unit	Topics	Contact Hours
5	**Applications of MS-Office for creating, editing and formatting a document** Applications of MS-Office for creating, editing and formatting a document	1
6	**Data presentation, tabulation and graph creation, statistical analysis, mathematical expressions** Data presentation, tabulation and graph creation, statistical analysis, mathematical expressions	1
7	**Database, concepts and types, creating database, uses of DBMS in Agriculture** Database, concepts and types, creating database, uses of DBMS in Agriculture	1
8	**Internet and World Wide Web (WWW), Concepts and components** Internet and World Wide Web (WWW), Concepts and components	2
9	**e-Agriculture, Concepts, design and development** e-Agriculture, Concepts, design and development	1
10	**Application of innovative ways to use information and communication technologies (IT) in Agriculture** Application of innovative ways to use information and communication technologies (IT) in Agriculture	2
11	**Computer models in Agriculture: statistical, weather analysis and crop simulation models, concepts, structure, inputs-outputs files, limitation, advantages and application of models for understanding plant processes, sensitivity, verification, calibration and validation** Computer models in Agriculture: statistical, weather analysis and crop simulation models, concepts, structure, inputs-outputs files, limitation, advantages and application of models for understanding plant processes, sensitivity, verification, calibration and validation	2
12	**IT application for computation of water and nutrient requirement of crops** IT application for computation of water and nutrient requirement of crops	1
13	**Computer controlled devices (automated systems) for Agri-input management** Computer controlled devices (automated systems) for Agri-input management	2
14	**Smartphone mobile apps in Agriculture for farm advises, market price, post harvest management etc.** Smartphone mobile apps in Agriculture for farm advises, market price, post harvest management etc.	2
15	**Geospatial technology, concepts, techniques, components and uses for generating valuable agri-information** Geospatial technology, concepts, techniques, components and uses for generating valuable agri-information	2

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Contents : Unit	Topics	Contact Hours
16	**Decision support systems, concepts, components and applications in Agriculture** Decision support systems, concepts, components and applications in Agriculture	1
17	**Agriculture Expert System, Soil Information Systems etc for supporting Farm decisions** Agriculture Expert System, Soil Information Systems etc for supporting Farm decisions	1
18	**Preparation of contingent crop-planning and crop calendars using IT tools** Preparation of contingent crop-planning and crop calendars using IT tools	1
Total Hours		**24**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Study of Computer components, accessories, practice of important DOS commands** Study of Computer components, accessories, practice of important DOS commands	2
2	**Introduction of different operating systems such as windows, Unix/ Linux, creating, Files and folders, file management** Introduction of different operating systems such as windows, Unix/ Linux, creating, Files and folders, file management	2
3	**Use of MS-WORD and MS power point for creating, editing and presenting a scientific document** Use of MS-WORD and MS power point for creating, editing and presenting a scientific document	2
4	**MS-EXCEL- Creating a spreadsheet, use of statistical tools, writing expressions, creating graphs, analysis of scientific data, handling macros** MS-EXCEL- Creating a spreadsheet, use of statistical tools, writing expressions, creating graphs, analysis of scientific data, handling macros	2
5	**MS- ACCESS: Creating database, preparing queries and reports, demonstration of Agri-information system** MS- ACCESS: Creating database, preparing queries and reports, demonstration of Agri-information system	2
6	**Introduction to World Wide Web (WWW) and its components. Hands on practice on Crop Simulation Models (CSM), DSSAT/Crop-Info/Crop Syst/ Wofost** Introduction to World Wide Web (WWW) and its components. Hands on practice on Crop Simulation Models (CSM), DSSAT/Crop-Info/Crop Syst/ Wofost	2

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
7	**Preparation of Inputs file for CSM and study of model outputs, computation of water and nutrient requirements of crop using CSM and IT tools** Preparation of Inputs file for CSM and study of model outputs, computation of water and nutrient requirements of crop using CSM and IT tools	2
8	**Use of smart phones and other devices in agro-advisory and dissemination of market information** Use of smart phones and other devices in agro-advisory and dissemination of market information	2
9	**Introduction of Geospatial Technology, for generating information important for Agriculture** Introduction of Geospatial Technology, for generating information important for Agriculture	2
10	**Hands on practice on preparation of Decision Support System. Preparation of contingent crop planning** Hands on practice on preparation of Decision Support System. Preparation of contingent crop planning	2
Total Hours		**20**

Textbook :

1 NA, NA, NA, NA

References:

1 Fundamentals of Computer Programming and Information Technology, Fundamentals of Computer Programming and Information Technology, Gurvinder Singh, Rachhpal Singh, K. K. Saluja, Kalyani Publishers, New Delhi., 2003

2 Fundamentals of Computers, Fundamentals of Computers, RAJARAMAN, V. ADABALA, NEEHARIKA, PHI, 2014

3 E-Commerce and Mobile Commerce Technology, E-Commerce and Mobile Commerce Technology, S. Chand, S. Chand Publishers, 2007

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking**
25.00	25.00	20.00	10.00	10.00	10.00

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Instructional Method:

1. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by white board may also use any of tools such as demonstration, role play, quiz, brainstorming, MOOCs etc.
2. The internal evaluation will be done on the basis of continuous evaluation of students in the class-room.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
4. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

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