COURSES WITH EXPERIENTIAL LEARNING

GOVERNMENT COLLEGE

KARIAVATTOM

2020-2021

LIST OF COURSES WITH SYLLABUS THAT INCLUDE EXPERIENTIAL LEARNING THROUGH PROJECT WORK/FIELD WORK/INTERNSHIP DURING THE YEAR

Module IV: Test management and automation:-Introduction, Test planning, Test management, Test process, Test reporting; Test automation. Testing tools
4. REFERENCES
4.1 Core
- Software testing principles and practices, Pearson by Srinivasan Descikan,Gopalaswamy Ramesh.
- Basis Beizes,software. testing techniques,Dreamtech,Second edition
4.2 Additional
- Edward Kit,Software Testing in the Real world, Pearson Education of India.
- K.K Prasad, Software Testing Tools,Dreamtech.

4.3 Assignment and activities:*case studies on different testing methodologies and comparison of time complexities.*

NB:- Activities and assignments are not meant for End_Semester_Examination

CS1661.3 FREE AND OPEN SOURCE SOFTWARE
1. AIM:
- To introduce different free and open source softwares

2. OBJECTIVES:
At the end of this course, the students will be able to
- Explain the features of free & open source software
- Familiarization with LINUX
- Work with PHP
- Demonstrate the working of MySQL

3. SYLLABUS

Module I: Open source software: Features, advantages over proprietary software, examples**, Free software:** concepts, features, Free software Vs Open Source software, Free software movements. Policies, GPL, Free OS, History and Features of Linux, Various flavours of Linux, Linux Kernel and Shell, Graphical Desktops- GNOME, KDE, Linux File System and Directories

Module-II: The building blocks of PHP: variables, globals& super globals**Data types**: Settype, type casting, test type, **Operators & Expressions**, **Flow control functions in PHP**, **Functions**: Defining a function variable scope, calling a function, returning values ,setting default values for arguments, passing variable reference   **Arrays**: creating arrays(associative & multidimensional), Array related functions **Working with strings:** Formatting strings, indexing, strlen() functions

Module-III: Forms in PHP: Creating a simple input form, combining HTML & PHP code on a single page, redirecting the user ,creating a send mail form, File upload form **Cookies**: Introduction, setting a cookie with PHP, deleting a cookie, session function overview: starting a session, working with session variables, passing session IDs in the query string, destroying sessions &unsetting variables

Module-IV: Database concepts: Open source database software: MySQL features MySQL data types: Numeric, date & time, string Table creation in MySQL: insert, select, where clause, ordering the result, like operator Selecting Multiple tables: using join, using queries   Modifying records: update command, replace command, delete command date & time functions in MySQL Interacting with MySQL using PHP: connecting to MYSQL ,Executing queries, Retrieving error messages, inserting data with PHP, retrieving data with PHP

4. REFERENCES
4.1 Core
- Julie C.Meloni, PHP, MySQL and Apache, Pearson Education
- Ivan Byross, HTML, DHTML, Javascript, Perl, BPB Publication

NB:- Activities and assignments are not meant for End_Semester_Examination

CS1644: MAJOR PROJECT
1. AIM

- To expose student to industry-standard project practices, through a real-life project work under time and deliverable constraints, applying the knowledge acquired through various courses.

2. OBJECTIVES

- To provide an opportunity to apply the knowledge gained through various courses in solving a real life problem
- To provide an opportunity to practice different phases of software/system development life cycle
- To introduce the student to a professional environment and/or style typical of a global IT industry
- To provide an opportunity for structured team work and project management
- To provide an opportunity for effective, real-life, technical documentation
- To provide an opportunity to practice time, resource and person management.

3. PROJECT GUIDELINES

- Group Size – Maximum 4, most preferably- 3
- No. of records – No. of group members+ 1 (Department copy)
- Certificate should include the names of all members

The minimal phases for the project are: Project feasibility, Investigation of system requirements, Data and Process Modeling, System Design, Program design, Program coding and unit testing, System integration, System implementation and acceptance testing.

3.1 Planning the Project: The Major Project is an involved exercise which has to be plannedwell in advance. The topic should be chosen in Semester 4 itself and the study of Course CS1342 should as far as possible, be based on the project topic, although in cases with valid reasons, the project guide may waive this condition. Related reading, training and discussions should start from semester 5 itself.

3.2 Selection of project work: Project work could be of 3 types:

a) Developing solution for a real-life problem: In this case, a requirement for developing acomputer based solution already Exists and the different stages of system development life cycle is to be implemented successfully. Examples are Accounting Software Package for a particular organization, Computerization of administrative functions of an organization, Web Based Commerce, etc. The scope for creativity and exploration in such projects is limited, but if done meticulously, valuable experience in the industrial context can be gained.

(b) Innovative Product development: These are projects where a clear-cut requirement fordeveloping a computer based solution may not be existing, but a possible utility for the same is conceived by the proposer. An Example is a Malayalam Language Editor with Spell Checker, Computer Music Software for Indian Music, Heat Engines Simulation Software for eLearning, Digital Water Marking Software etc.

(c) Research level project: These are projects which involve research and development and maynot be as structured and clear cut as in the above case. Examples are Malayalam Character Recognition, Neural Net Based Speech Recogniser, Biometric Systems, Machine Translation System etc. These projects provide more challenging opportunities to students and can be attempted.

If any student identifies proper support in terms of guidance, technology and references from External organizations and also the supervisors are convinced of the ability of the student(s)to take up the project, it shall be permitted. The methodology and reporting of such projects could be markedly different from type (a) and is left to the proposer/external supervisor of the projects.

3.3 Selection of Team: To meet the stated objectives, it is imperative that Major Project is donethrough a team effort. Though it would be ideal to select the team members at random (drawing lots) and this should be strongly recommended, due to practical considerations, students may also be given the choice of forming themselves into teams preferably 3 in numbers up to a maximum of 4 members (teams less than 3 members may be permitted in certain cases,

for valid reasons). A gender mix should also be strongly suggested. A team leader shall be elected through drawing lots. Teams shall maintain team meeting minutes and ensure that every team member has tasks assigned in writing. Team meeting minutes shall form a part of the Project Report. Even if students are doing projects as groups, each one must independently take up different modules of the work and must submit the reports also independently (though, in such cases, some common materials is permissible).Evaluation will also be done independently.

3.4 Selection of Tools: No restrictions shall be placed on the students in the choice ofplatforms/tools/languages to be utilized for their project work, though open source is strongly recommended, wherever possible. No value shall be placed on the use of tools in the evaluation of the project.

3.5 Selection of Organization & Guide: No restrictions shall be placed on the students in thechoice of organization where project work may be done, in terms of locality, type (public/private) etc. It is the duty of the Head of Institute/Principal of College to ensure that the Aim, Objectives and full project guidelines are communicated to the external organization. The guide should ideally be a post-graduate with minimum 2 years of work experience.

Students may also choose to do project in the college/institute (or partially in the college/institute and partially in an external organization), especially product-based work, but in such cases the supervisors must ensure that (i) industry practices are followed (ii) the students undertake a planned visit to an IT industry with international operations to make up for the loss of experience and (iii) the services of an external guide with industry experience is obtained.

3.6 Project Management: Head of Department /Institute should publish a list ofstudents, projects topics, internal guide and external organization (if any) and teams agreed, before the end of semester 5. Changes in this list may be permitted for valid reasons and shall be considered favourably by Head of Department /Institute any time before commencement of the project. Any request for change after commencement should considered by a committee of 3 teachers and their recommendation shall be accepted by Head of Department/ Institute.

Gantt-chart of proposed activities and a draft statement of project deliverables (which maysubsequently be altered if justified) should be prepared before the commencement of the project. The actual completion of each phase should be noted on the chart in the course of the project work. Team meetings should document the progress of the project. Students should submit a fortnightly report of progress which could be indication of percentage of completion marked on the original Gantt-chart, with any notes attached. Students should ideally keep a daily activity log sheet. Changes in the submitted documents are possible, as project development is essentially an evolutionary process. The project guide must ensure that changes are necessary due to the knowledge gained in succeeding phases of the project. The date ofCompletion of a phase should be brought forward if the changes made are deemed to be errors and not due to additional knowledge gained from a succeeding phase.

3.7 Documentation:

The following are the major guidelines: The final outer dimensions of the report shall be 21 cm X 30 cm. The colour of the flap cover shall be light green. Only hard binding should be done, with title of the Project and the words "< TITLE> BSc(CS) Project Report 2018" displayed on the spine in 20 point, Bold, Times New Roman. It is highly recommended that Latex be used for documentation.

• The text of the report should be set in 12 pt, Times New Roman, 1.5 Spaced.

• Headings should be set as follows: CHAPTER HEADINGS 20 pt, Times New Roman, Bold, All Caps, Centered.

1. SECTION HEADINGS 12 pt, Times New Roman, Bold, All Caps, Left Adjusted.

1. 1 Section Sub-headings 12 pt, Times New Roman, Bold, Left Adjusted.

Titles of Figures, Tables etc are done in 12 point, times New Roman, Italics, Centered.

<PROJECT TITLE>

<STUDENT NAME>

<COLLEGE NAME and EMBLEM>

PROJECT REPORT

Submitted in partial fulfilment of the

Requirements for the award of

BSc (Computer Science) degree of

University of Kerala

2018

Some general guidelines on documentation stylistics are:

- Double quotes and single quotes should be used only when essential. Words put in quotes are better highlighted by setting them in italics. Eg: This process is known as "morphing". This process is known as *morphing.*
- Page numbers shall be set at right hand top corner, paragraph indent shall be set as 3.
- Only single space need be left above a section or sub-section heading and no space may be leftafter them.
- Certificate should be in the format: "Certified that this report titled........................ is a bonafide record of the project work done by Sri/Kum......................... under our supervision and guidance, towards partial fulfillment of the requirements for the award of the Degree of BSc (Computer Science) of the University of Kerala" with dated signatures of Internal Guide, external guide and also Head of Department/Institute.
- If the project is done in an external organization, another certificates on the letterhead of the organization is required: "Certified that his report titled.............................. is a bonafide record of the project work done by Sri/Kum............................... under any supervision and guidance, at the ....Department of..................... (Organization) towards partial fulfilment of the requirements for the award of the Degree of BSc (Computer Science) of the University of Kerala".
- References shall be IEEE format (see any IEEE magazine or transaction). Take care in use of italics and punctuation. While doing the project, keep note of all books you refer, in the correct format, and include them in alphabetical order in your reference list. Eg: A book is cited as: Kartalopoulos, S V Understanding Neural Networks and Fuzzy Logic, BPB Publishers, 1996, pp. 21-27. (pp.21-27 indicates that pages 21-27 have been referred. If the whole book is being referred, this may be omitted. If a single page is referred, say 7, it may be cited as p.**7.**
- **Report writing is NOT a hasty activity done after finishing the project**. Students must try to develop the report along with the work, so as to give it flesh and blood. Drafts should be read, modified, spell checked and grammar checked at least thrice during the course of the project and before a final printout is taken, the same may be got approved from the internal guide.
- The students should send two interim reports after the analysis and design phases of the project to internal guides. This will also help the students in their report writing.
- A soft copy of the complete documentation, including source code, should be maintained for any clarification during assessments.

- The Gantt chart, fortnightly progress reports recorded in team meeting minutes mentioned in section 3.5 should appear as appendix to the project report.

Regarding the body of the report, as an indicative example, the following is given (though students should not attempt to fit every kind of project report into this format):

  – Organizational overview (of the client organization, where applicable)
  – Description of the present system
  – Limitations of the present system
  – The Proposed system- Its advantages and features
  – Context diagram of the proposed system.
  – DFD of the proposed system with at least one additional level of Expansion
  – Structure Chart/E-R diagrams of the System
  – System flowchart
  – Files or tables (for DBMS projects) list. Class names to be entered for each file in OO systems.
  – List of fields or attributes (for DBMS projects) in each file or table.
  – File table that shows the files/tables used by each program and the files are read, written to, updated, queried or reports were produced from them.
  – Reports List with column headings and summary information for each report.
  – System Coding and variable/file/table naming conventions
  – System controls and standards
  – Screen layouts for each data entry screen.
  – Report formats for each report.

Program documentation is suggested on the following lines:

  – Program id
  – Program function explanation
  – Program level pseudocode or flowchart.
  – Data entry screen (reproduced from system documentation).
  – Report layout (reproduced from system documentations)
  – Decision tables, decision trees, with English Explanation where necessary.
  – Program listing
  – Test data
  – Test results.

3.8 Methodology:

Wherever applicable, object oriented approach should be used for software development. The project report should generally contain details of the following steps *(though students should notattempt to fit every kind of project into this format):*

(a) Analysis
  – Study of existing systems and its drawbacks
  – Understanding the functionalities of the system in detail
  – Preparation of requirements
  – Conduct of Feasibility study
  - Development of DFD/use case diagrams

(b) Design
  – Design of each subsystems/modules
  – Design of each classes
  – Design of Algorithms for problem solving
  – User interface /Input/ Output Design
  – Any other steps if necessary

(c) Coding and Implementation

(d) Testing

(e) Security, Backup and Recovery Mechanisms

(f) On line help and User Manuals

(g) Upgradability Possibilities

3.9 Project IPR & Utilization: The intellectual property rights in all project work done by the students shall vest with the University of Kerala, except in cases where some external organizations seek undertaking from students to concede IPR in all work done in their organization or under their guidance. Where possible, students should attempt to obtain at least a joint IPR for the University. In cases where project works are of public utility, students shall be asked to publish their work including source code and documentation, in so far as their rights are clear.

4. REFERENCES
4. 1 Core
- S A Kelkar, *Software Project Management*, Prentice Hall of India
- W Alan Randolph, Barry Z. Posner, *Effective project planning and management*, PHI

4.2 Additional
- Greg Mandanis, *Software Project Management Kit for Dummies*, IDG Books Joel Henry, *Software Project management*
- Frederic P B, Mythical Man-month, *Essays on Software Engineering*, Addison Wesley David Lamport, *Latex: A document Preparation System*, 2/e, Pearson Edn

5. EVALUATION
5.1 Criteria for external evaluation of Major Project
External evaluation is done by an external examiner appointed by the University
The following components are to be assessed for the End Semester Evaluation of the Major Project:
- Quality of documentation- 30 marks
- Presentation of work- 25 marks
- Viva - 25 marks

Total - 80 marks

5.2 Criteria for internal evaluation of Major Project
Internal evaluation is be done by conducting a viva voce by a team of evaluators comprising of the concerned guides and/or Head of the Department. The following are the components for internal evaluation of the Major Project:
- Presentation of the work-5 marks
- Individual involvement & team work/ Attendance- 5marks
- Timely submission and assessment of 2 interim reports -10 marks

Total - 20 marks

3. SYLLABUS

Module I: Introduction to networks – Data Communication – Data flow simplex, Half duplex, Full duplex-Type of Connection – broadcast, Point–to-Point, multi-drop. Bandwidth- bit rate, baud rate. Transmission media –Copper wires, fibre optics, Radio transmission, microwave, Satellite. Switching - circuit, packet, message.

Module II: Network software - standards- Layering, packets, Layered PDUs, ISO-OSI model, TCP/IP model – Comparison. Framing- bit oriented, byte oriented, Error correction – detection – parity, hamming code, CRC. Flow control – stop and wait, sliding window. Error control - Stop &wait ARQ, Go Back N ARQ, Piggybacking, pipelining, Ethernet, Multiple Access Protocols – pure- slotted ALOHA, CSMA, CSMA/CD. LAN Standards, Token bus, Token ring, Interfacing devices – bridge, hub, switch, router, gateway.

Module III: Internetworking- datagrams, fragmentation – Routing-Flooding, Distance vector routing, Link state routing. Concepts of congestion control-leaky bucket algorithm. Process to Process delivery -TCP, UDP, Application Layer -DNS, Remote login, file transfer protocol (FTP).

Module IV: Information Security: Network security – concepts and policies, cryptography –encryption, ciphers, steganography, symmetric and public key encryption, RSA algorithm, authentication methods, message digest, digital signatures, DSS, E-mail security, MIME, IP Security, Web Security: Secure Socket layer. Malicious Software, viruses & anti-virus software, firewall. Security and Law: - Regulations in India. Indian Copyright Act, Consumer Protection Act. Future Trends – The Law of Convergence.

4. REFERENCES

4.1 Core

- Brijendra Singh, Data Communication and Computer Networks, 3/e, PHI
- Brijendra Singh, *Cryptography & Network Security*, PHI.
- Pachghare, V.K., *Cryptography and Information Security*, PHI

4.2 Additional

- Behrouz A Forouzan, Data Communication and Computer networks, 4th ed,McGraw Hill
- Achyut S Godbole, Data communications and networks, McGrawHill, Second
- Tanenbaum, "computer-networks-a--4th-edition"

4.3 Assignments and Activities: *AES, Blowfish algorithms, Kerberos, Comparison of PGP and/ SMIME. Study of common malicious software, Anti-viruses, Firewall, Trusted systems. Information Technology Act2000/2008.*

NB:- Activities and assignments are not meant for End_Semester_Examination

PC1673: MAJOR PROJECT

1. AIM

- To expose student to industry-standard project practices, through a real-life project work under time and deliverable constraints, applying the knowledge acquired through various courses.

2. OBJECTIVES

- To provide an opportunity to apply the knowledge gained through various courses in solving a real life problem
- To provide an opportunity to practice different phases of software/system development life cycle
- To introduce the student to a professional environment and/or style typical of a global IT industry
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3.1 Planning the Project: The Major Project is an involved exercise which has to be planned well in advance. The topic should be chosen in Semester 4 itself and the study of Course CS1342 should as far as possible, be based on the project

topic, although in cases with valid reasons, the project guide may waive this condition. Related reading, training and discussions should start from semester 5 itself.

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a) Developing solution for a real-life problem: In this case, a requirement for developing a computer based solution already Exists and the different stages of system development life cycle is to be implemented successfully. Examples are Accounting Software Package for a particular organization, Computerization of administrative functions of an organization, Web Based Commerce, etc. The scope for creativity and exploration in such projects is limited, but if done meticulously, valuable experience in the industrial context can be gained.

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3.6 Project Management: Head of Department /Institute should publish a list of students, projects topics, internal guide and external organization (if any) and teams agreed, before the end of semester 5. Changes in this list may be permitted for valid reasons and shall be considered favourably by Head of Department /Institute any time before commencement of the project. Any request for change after commencement should considered by a committee of 3 teachers and their recommendation shall be accepted by Head of Department/ Institute.

Gantt-chart of proposed activities and a draft statement of project deliverables (which may subsequently be altered if justified) should be prepared before the commencement of the project. The actual completion of each phase should be noted on the chart in the course of the project work. Team meetings should document the progress of the project. Students should submit a fortnightly report of progress which could be indication of percentage of completion marked on the original Gantt-chart, with any notes attached. Students should ideally keep a daily activity log sheet. Changes in the submitted documents are possible, as project development is essentially an evolutionary process. The project guide must ensure that changes are necessary due to the knowledge gained in succeeding phases of the project. The date of Completion of a phase should be brought forward if the changes made are deemed to be errors and not due to additional knowledge gained from a succeeding phase.

3.7 Documentation:

Sem	Code	Title	L	T	P	C	IA	UE	Total
III	PH 231	Advanced Quantum Mechanics	6	1	…	3	25	75	100
	PH 232	Atomic and Molecular Spectroscopy	6	1	…	3	25	75	100
	PH 233 X	Special Paper I	6	1	…	3	25	75	100
	PH 261	Advanced Physics Practicals	…	1	4	…			
	PH 261	Advanced Electronics Practicals	…	1	3	…			
		Total for Semester III (S3)	18	5	7		75	225	300
IV	PH 241	Condensed Matter Physics	6	1	…	3	25	75	100
	PH 242	Nuclear & Particle Physics	6	1	…	3	25	75	100
	PH 243 X	Special Paper II	6	1	…		25	75	100
	PH 261	Advanced Physics Practicals	…	1	3	6	25	75*	100
	PH 262	Advanced Electronics Practicals	…	…	4	6	25	75*	100
	PH 201	Project	…	…	…	…	25	75	100
	PH 202	Viva voce	…	…	…	…	…	100	100
		Total for Semester IV (S4)	18	5	7	…	150	550	700
		Grand Total	**72**	**20**	**28**	**…**	**425**	**1375**	**1800**

* 10 marks for records

X: E (Electronics), M (Materials Science) N (Nuclear Physics), S (Space Physics) T (Theoretical Physics)

L - Lecture IA - Internal Assessment

T - Tutorial UE - University Exam

P - Practical

B: SPECIAL PAPERS FOR THIRD AND FOURTH SEMESTERS

Sl. No	Special paper Category	Code Nos of Special Papers	Name of Special Papers
1	ELECTRONICS	PH 233 E	Advanced Electronics-I
		PH 243 E	Advanced Electronics-II
2	MATERIALS SCIENCE	PH 233 M	Materials Science-I
		PH 243 M	Materials Science-II
3	NUCLEAR PHYSICS	PH 233 N	Advanced Nuclear Physics
		PH 243 N	Radiation Physics
4	SPACE PHYSICS	PH 233 S	Space Physics and Plasma Physics
		PH 243 S	Advanced Astrophysics
5	THEORETICAL PHYSICS	PH 233 T	Theoretical Physics-1
		PH 243 T	Theoretical Physics-2

C: GENERAL GUIDELINES
C-1 Theory papers

Books of study and corresponding chapters are given for most of the theory papers in the syllabus to define the scope of the syllabus.

For internal evaluation of theory papers at least one Viva must be conducted for each paper

For assignments and seminars current developments in the areas of the syllabus may be chosen for improving the general awareness of the student

In tutorial sessions of theory papers problem solving in different topics of the syllabus may be discussed.

C-2 Lab Courses

Rough records may be properly maintained for each practical paper and should be produced during the University Practical Examinations along with original record book.

Each student is encouraged to include critical comments on each experiment done in the original records including sources and estimates of errors, limitations in the experiments done and scope for improvements/additions in the experimental work.

In performing Electronics Practicals: Bread Board Practice is recommended in addition to soldering of electronic circuits.

C-3 Special papers

Depending on the expertise and facilities available in a College (with approval of the University and Government as per rules) one of the five Specialisations (Special paper Category) may be chosen by a student for the third and fourth semesters of the M.Sc Programme in Physics. At present for all specialisations, practical courses are common.

C4-Project work and Project Evaluation

The Project may be started during the second semester of the M.Sc programme.

25 marks of the project are to be awarded on the basis of internal assessment carried out in the College for each student concerned. A Project rough record may be maintained by each student to help to evaluate the progress of the project. Each student is required to present the completed project along with experimental demonstration if any in the college before the final University examinations in the Fourth Semester of the MSc (Physics) Programme.

For University Examinations for the Project: 50 marks is allotted for Project report evaluation and 25 marks allotted for Project based Viva Voce to be conducted along with General Viva Voce examination by the University.

D Pattern of University Question Papers
Theory Papers

Each question Paper has three parts: Part A, Part B and Part C

Part A: Eight short answer questions covering the entire syllabus. *One of the questions from this section may be used to test the CURRENT AWARENESS (general knowledge) of the student areas of syllabus covered for this paper.* Each question carries 3 marks.

Part B: contains three compulsory questions with internal choice. Questions cover all the three units in the syllabus. Each question carries 15 marks.

Part C: contains six problems covering the entire syllabus. The student needs to answer any three. Each question carries five marks.

Suggested Readings

1. A text book of Biotechnology, R. C. Dubey, S. Chand Publications, New Delhi
2. Bioinformatics- Genomics and Post-genomics, Frederich Dardel & Francois Kepes; John Wiley & Sons.
3. Essential Bioinformatics- Jin Xiong, Cambridge University Press, UK.
4. Introduction to Bioinformatics – V. Kothekar, Druv Publication
5. Introduction to Genetic Engineering & Biotechnology- A. J. Nair; Jones & Bartlett Publishers, Boston, USA.
6. Nanobiotechnology: Concepts, Applications and Perspectives-C.M. Niemeyer and C.A. Mirkin, Wiley, US

BV1661 Project Work / Dissertation

An independent project or dissertation work related to Biotechnology has to be carried out by each student during the VI semester under a faculty member of the college, with in the college or an external Institute/ Department / University duly certified by the Head of the Department and supervising teacher. The thesis in the prescribed format should be submitted for evaluation at the viva voce examination in VI semester.

Elective Courses of Botany

SEMESTER VI

Elective Course of Core subject

BV16421.1 Horticulture

Credits: 2   **Contact Hours: 54**

Module I   **10 hrs**

Introduction: Divisions of horticulture, Importance and scope of horticulture. Principles of garden making, Types of pots and containers Potting mixture and potting media – soil, sand, peat, sphagnum moss, vermiculite Soil types, Soil preparation, Irrigation methods, Hydroponics.

Module II   **12 hrs**

Propagation methods- Cuttings, Layering – Air layering, Ground layering (Tip, Trench and Compound) Budding – T- budding, Grafting – Approach grafting, Bridge grafting, whip and tongue grafting. , Garden tools and implements

Manures and fertilizers- Farmyard manure, compost, vermicompost and biofertilizers. Chemical fertilizers – NPK. Time and application of manures and fertilizers. Foliar sprays

Module III   **12 hrs**

Components of Garden- Lawns and landscaping, Trees, shrubs and shrubberies, climbers and creepers, Flower beds and borders, ornamental hedges, edges, Drives, roads, walks and paths, Carpet beds, topiary, trophy, rockery, Conservatory or green houses Indoor garden, Roof garden, Bonsai

1. Programme Name
2. Program code 241
3. Course name (Project – Factory Internship)
4. Course code (IC 1661)
   Syllabus

   PROJECT– Factory Internship

   Students have to undergo a training at a chemical factory of their choice and submit a report of the raw materials, processes and end products and their analysis. The lecture hours of V and VI semesters are adjusted for the students to do continuous work in a factory.

1. Program code: 238

2. Project course name : Project work

3. Project course code: BC 1646

4. Included in course from 2015 onwards till now

Program name: BSc Biochemistry

MM245 DISSERTATION/PROJECT

no syllabus

msc mathematics 620

1. Programme Name : B.Sc Statistics

2. Programme code : 225

3. Course name: Project

4. Course code: ST 1646

5. Collaboration : NIL

	SEMESTER IV						
EN 1411	English	5		4	3	25%	75%	28
1411	Addl. Language	5		4				
GG 1441	**Human Geography**	3		3				
GG 1442	**Practical I**		2	3				
GL 1431	**Complementary Course I (GEOLOGY**	3	2	3				
GL 1432	**Complementary Course I Practical (GEOLOGY)**		2	4				
ST 1431.3	**Complementary Course II (STATISTICS)**	3		3				
ST 1432.3	**Complementary Course II Practical (STATISTICS)**		2	4				
		25		28				
	SEMESTER V							
GG 1541	**Geography of India**	4		4	3	25%	75%	16
GG 1542	**Geography of Kerala**	3		3				
GG 1543	**Geography of Resources**	3		3				
GG 1544	**World Regional Geography**	4		4				
GG 1551.1 GG 1551.2 GG 1551.3 GG 1551.4	**OPEN COURSE Geography of Tourism Physical Geography General Geography Bio Geography**	3		2				
GG 1540	**Practical II**	6		*				
	Project *		2	*				
		25		16				

	SEMESTER VI							
GG 1641	**Cartography**	4		4	3	25%	75%	25
GG 1642	**Environmental Geography**	4		4				
GG 1661	**An Introduction to Disaster Management**	3		2				
GG 1643	Practical II			4				
GG 1644	Practical III		6	4				
GG 1645	Practical IV		5	3				
GG 1646	**Project***		3	4				
		25		25				120