

SPLIT-UP SYLLABUS FOR INFORMATICS PRACTICES (065)

CLASS - XII (NEW SYLLABUS)

(SESSION 2019 - 20 ONWARD)

DISTRIBUTION OF MARKS

UNIT	UNIT NAME	MARKS
1	Data Handling - 2	30
2	Basic Software Engineering	15
3	Data Management-2	15
4	Society, Law and Ethics-2	10
5	Practicals	30
	TOTAL	100

MONTH- WISE DISTRIBUTION

Month	Topics to be covered	Th.	Pr.
June-July	Unit 1: Data Handling -2 Python Pandas <ul style="list-style-type: none"> • Advanced operations on Data Frames: pivoting, sorting, and aggregation • Descriptive statistics: min, max, mode, mean, count, sum, median, quartile, var • Create a histogram, and quantiles. • Function application: pipe, apply, aggregation (group by), transform, and apply map. • Reindexing, and altering labels. 	50	40
August	Numpy <ul style="list-style-type: none"> • 1D array, 2D array • Arrays: slices, joins, and subsets • Arithmetic operations on 2D arrays • Covariance, correlation and linear regression Plotting with Pyplot <ul style="list-style-type: none"> • Plot bar graphs, histograms, frequency polygons, box plots, and scatter plots. 	30	30
September	Unit 2: Basic Software Engineering (BSE) <ul style="list-style-type: none"> • Introduction to software engineering • Software Processes: waterfall model, evolutionary model, and component based model • Delivery models: incremental delivery, spiral delivery • Process activities: specification, design/implementation, validation, evolution • Agile methods: pair programming, and Scrum • Business use-case diagrams • Practical aspects: Version control system (GIT), and do case studies of software systems and build use-case diagrams 	25	10

HALF YEARLY EXAMINATION			
October	Unit 3: Data Management (DM-2) <ul style="list-style-type: none"> • Write a minimal Django based web application that parses a GET and POST request, and writes the fields to a file - flat file and CSV file. • Interface Python with an SQL database • SQL commands: aggregation functions – having, group by, order by. 	20	20
November	UNIT 4: Society , Law and Ethics (SLE-2) <ul style="list-style-type: none"> • Intellectual property rights, plagiarism, digital rights management, and licensing (Creative Commons, GPL and Apache), open source, open data, privacy. • Privacy laws, fraud; cyber-crime- phishing, illegal downloads, child pornography, scams; cyber forensics, IT Act, 2000. • Technology and society: understanding of societal issues and cultural changes induced by technology. • E-waste management: proper disposal of used electronic gadgets. • Identity theft, unique ids, and biometrics. • Gender and disability issues while teaching and using computers. • Role of new media in society: online campaigns, crowdsourcing, smart mobs • Issues with the internet: internet as an echo chamber, net neutrality, internet addiction • Case studies - Arab Spring, WikiLeaks, Bit coin 	15	
December- January	Revision, Project Work & Pre-Board Examination		
February	Revision & AISSCE Practical Examination		

GUIDELINES FOR PRACTICAL WORK
INFORMATICS PRACTICES (065)
CLASS - XII (NEW SYLLABUS)
DISTRIBUTION OF MARKS

S.No.	UNIT NAME	MARKS
1	Lab Test (10 marks)	
	Python programs to test PCT (60% logic + 20% documentation +20% code quality)	7
	Small Python program that sends a SQL query to a database and displays the result. A stub program can be provided.	3
2	Report File + viva (09 marks)	
	Report file: Minimum 21 Python programs. Out of this at least 4 programs should send SQL commands to a database and retrieve the result; at least 1 program should implement the web server to write user data to a CSV file.	7
	Viva voce (based on the report file)	2
3	Project + viva (11 marks) *	
	Project Work (that uses most of the concepts that have been learnt)	8
	Project Viva Voce.	3

*Refer CBSE Curriculum for detailed guidelines for Project work.

Data handling using Python libraries

- Use map functions to convert all negative numbers in a Data Frame to the mean of all the numbers.
- Consider a Data Frame, where each row contains the item category, item name, and expenditure.
 - * Group the rows by the category, and print the total expenditure per category.
- Given a Series, print all the elements that are above the 75th percentile.
- Given a day's worth of stock market data, aggregate it. Print the highest, lowest, and closing prices of each stock.
- Given sample data, plot a linear regression line.
- Take data from government web sites, aggregate and summarize it. Then plot it using different plotting functions of the PyPlot library.

Basic Software Engineering

- Business use-case diagrams for an airline ticket booking system, train reservation system, stock exchange
- Collaboratively write a program and manage the code with a version control system (GIT)

Data Management : SQL + Web Server:

- Find the min, max, sum, and average of the marks in a student marks table.
- Find the total number of customers from each country in the table (customer ID, customer Name, country) using group by.
- Write a SQL query to order the (student ID, marks) table in descending order of the marks.
- Integrate SQL with Python by importing MYSQL dB
- Write a Django based web server to parse a user request (POST), and write it to a CSV file.