English Translation.

Jagat Guru No.

#### Jagat Guru Nanak Dev Punjab State Open University, Patiala

(Established by Act 19 of 2019 of Legislature of the State of Punjab)

Email ID registrar@psou.as.in Contact No. 9463352523

Ref No. PSOU/Admin./2022/.../505

Dated: 14.03.2022

To

The Principal, Shaheed Major Harminderpal Singh Government College, Sahibzada Ajit Singh Nagar.

Subject: Regarding grant of affiliation for making admissions in the Certificate/Diploma Courses for the cycle of January, 2022.

Ref: Regarding your letter No. 4383 dated 09.03.2022.

In view of the subject cited above and letter under reference your institution (college) has been granted permission to make admissions in the Certificate/Diploma Courses for the cycle of January, 2022:-

#### 1. Certificate/Diploma Course in Software Development and Programming.

The approval for admission in the above mentioned courses is granted on the basis of the the following conditions:

- 1. This affiliation is granted to the College solely for making admission in the above mentioned course.
- 2. The College will follow the instructions regarding requisite syllabus and fee etc issued by the University from time to time in letter and spirit.
- 3. The college will be reposible for verifying the qualifications laid down by the university and requisite certificates of the admitted students in these courses.
- 4. After the admissions in these courses, a complete List/Return(with

Principal SMHS Govt. College Sahibzada Ajit Singh Nagar

complete details) of the students along with requisite fee etc will be made available to the University at the earliest.

The Coordinator, Learner Support Centre appointed by the affiliated 5. college will provide information about the students within the stipulated time as demanded from time to time by the university.

The college will charge the fee from the students as prescribed by the 6.

university only.

The college will be responsible for preparing the students according to 7. the syllabus eg theory, practical, viva voce, heads on training and for following the rules and regulations with regard to their admissions, registration, academic examinations etc.

8. The college will be responsible for fulfilling the requisite rules for conduct of university examinations and for making requisite

arrangements (along with online examinations) etc.

Apart from the above, the university may issue revised/new instructions 9.

to the college regarding these Courses any time.

10. In case the college does not follow the instructions mentioned above or issued from time to time, the University may cancel its affiliation.

> Sd/-Registrar

15/3/20

## JAGAT GURU NANAK DEV PUNJAB STATE OPEN UNIY

PATIALIA.

Established by the Act No. 19 of 2019 of the Legislature of the State of Punjab)

Email ID registrar@psou.ac.in

Contact No. 94633 52523

Ref No. PSOU/Admin./2022/. 15:05

Dated: 14.03.2022

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ਪ੍ਰਿਸੀਪਲ,

ਸਹੀਦ ਮੇਜਰ ਹਰਮਿੰਦਰਪਾਲ ਸਿੰਘ ਸਰਕਾਰੀ ਕਾਲਜ,

ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ।

ਵਿਸਾ:

ਸ਼ਰਟੀਫਿਕੇਟ/ ਡਿਪਲੋਮਾ ਕੋਰਸਾਂ ਵਿੱਚ ਦਾਖਲੇ ਕਰਨ ਲਈ ਜਨਵਰੀ 2022 cycle ਦੀ ਮੰਨਜੂਰੀ (Affiliation)

ਦੇਣ ਸਬੰਧੀ।

ਹਵਾਲਾ :

ਆਪ ਜੀ ਦਫਤਰ ਤੋਂ ਪ੍ਰਾਪਤ ਪੱਤਰ ਨੰ. 4383 dated 09.03.2022 ਸਬੰਧੀ।

ਉਪਰੋਕਤ ਵਿਸੇ ਅਤੇ ਹਵਾਲਾ ਅਧੀਨ ਪੱਤਰ ਦੇ ਸਨਮੁੱਖ ਆਪ ਜੀ ਦੀ ਸੰਸਥਾ (ਕਾਲਜ) ਨੂੰ ਜਨਵਰੀ 2022 **cy**cle ਲਈ ਹੇਠ ਲਿਖੇ ਸਰਟੀਫਿਕੇਟ/ ਡਿਪਲੋਮਾ ਕੋਰਸਾਂ ਵਿੱਚ ਦਾਖਲੇ ਕਰਨ ਲਈ ਮਨਜੂਰੀ (Affiliation) ਦਿੱਤੀ ਜਾਂਦੀ ਹੈ:-

#### Certificate/ Diploma Course in Software Development and Programming.

ਉਕਤ ਕੋਰਸਾਂ ਵਿੱਚ ਦਾਖਲੇ ਦੀ ਮੈਨਿਜੂਰੀ ਹੇਠ ਲਿਖੀਆ ਸਰਤਾਂ ਦੇ ਅਧਾਰ ਤੇ ਦਿੱਤੀ ਜਾ ਰਹੀ ਹੈ: -

1. ਕਾਲਜ ਨੂੰ ਮੰਨਜੂਰੀ (Affiliattion) ਕੇਵਲ ਉਕਤ ਕੋਰਜਾਂ ਵਿੱਚ ਦਾਖਲਾ ਕਰਨ ਲਈ ਦਿੱਤੀ ਗਈ ਹੈ।

2. ਕਾਲਜ ਵੱਲੋਂ ਯੂਨੀਵਰਸਿਟੀ ਦੁਆਰਾ ਇਹਨਾਂ ਕੋਰਸਾਂ ਸਬੰਧੀ ਨਿਰਧਾਰਤ ਸਿਲੇਬਸ, ਫੀਸ ਆਦਿ ਸਬੰਧੀ ਸਮੇਂ-2 ਤੇ ਜਾਰੀ ਦਿਸ਼ਾਂ ਨਿਰਦੇਸ਼ਾਂ ਦੀ ਇੰਨ-ਬਿਨ ਪਾਲਣਾ ਕੀਤੀ ਜਾਵੇਗੀ।

3. ਇਹਨਾਂ ਕੋਰਸਾਂ ਵਿੱਚ ਦਾਖਲ ਹੋਣ ਵਾਲੇ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਯੂਨੀਵਰਸਿਟੀ ਦੁਆਰਾ ਨਿਰਧਾਰਤ ਕੀਤੀ ਗਈ ਯੋਗਤਾ ਅਤੇ ਸਬੰਧਿਤ ਸਰਟੀਫਿਕੈਟ ਤਸਦੀਕ ਕਰਨ ਦੀ ਜੁੰਮੇਵਾਰੀ ਕਾਲਜ ਦੀ ਹੋਵੇਗੀ।

4. ਇਹਨਾਂ ਕੋਰਸਾਂ ਵਿੱਚ ਦਾਖਲੇ ਕਰਨ ਉਪਰੰਤ ਵਿਦਿਆਰਥੀਆਂ ਦੀਆਂ ਲਿਸਟਾਂ/ ਰਿਟਰਨ (ਪੂਰਨ ਵੇਰਵਿਆ ਸਮੇਤ) ਅਤੇ ਨਿਰਧਾਰਿਤ ਫੀਸ ਆਦਿ ਨਾਲ ਤਰੁੰਤ ਯੂਨੀਵਰਸਿਟੀ ਨੂੰ ਮਹੁਈਆਂ ਕਰਵਾਈ ਜਾਵੇਗੀ।

5. ਯੂਨੀਵਰਸਿਟੀ ਦੁਆਰਾ ਸਮੇਂ-2 ਵੇ ਵਿਦਿਆਰਥੀਆਂ ਸਬੰਧੀ ਮੰਗੀ ਗਈ ਜਾਣਕਾਰੀ ਕਾਲਜ ਵੱਲੋਂ ਨਿਯੁਕਤ Learner Support Centre ਦੇ ਕੋਆਰਡੀਨੇਟਰ ਦੁਆਰਾ ਨਿਰਧਾਰਿਤ ਸਮੇਂ ਸਿਰ ਮਹੁਈਆਂਤ ਕਰਵਾਈ ਜਾ ਜਾਵੇਗੀ।

6. ਕਾਲਜ ਵੱਲੋਂ ਵਿਦਿਆਰਥੀਆਂ ਤੋਂ ਕੋਲੋਂ ਕੇਵਲ ਯੂਨੀਵਰਸਿਟੀ ਦੁਆਰਾ ਨਿਰਧਾਰਿਤ ਫੀਸਾਂ ਹੀ ਵਸੂਲੀਆ ਜਾਣਗੀਆ।

7. ਯੂਨੀਵਰਸਿਟੀ ਦੇ ਸਿਲੇਬਸ ਅਨੁਸਾਰ ਜਿਵੇਂ ਬਿਊਰੀ, ਪ੍ਰੈਕਟੀਕਲ, ਵਾਇਵਾ, ਹੈਂਡਸ ਆਨ ਟਰੈਨਿੰਗ ਆਦਿ ਮੁਤਾਬਿਕ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਤਿਆਰੀ ਕਰਵਾਉਣ ਅਤੇ ਉਹਨਾਂ ਕੋਲੋਂ ਦਾਖਲੇ, ਰਜਿਸਟਰੇਸ਼ਨ, ਅਕਾਦਮਿਕ, ਪ੍ਰੀਖਿਆਵਾਂ ਆਦਿ ਸਬੰਧੀ ਯੂਨੀਵਰਸਿਟੀ ਦੁਆਰਾ ਬਣਾਏ ਨਿਯਮਾਂ ਅਤੇ ਲੋੜਾਂ ਦੀ ਪਾਲਣਾ ਕਰਵਾਉਣਾ ਕਾਲਜ ਦੀ ਜੰਮੇਵਾਰੀ ਹੋਵੇਗੀ।

8. ਇਮਤਿਹਾਨਾਂ ਸਬੰਧੀ ਯੂਨੀਵਰਸਿਟੀ ਵੱਲੋਂ ਨਿਰਧਾਰਿਤ ਮਾਪਦੰਡਾਂ ਨੂੰ ਪੂਰਾ ਕਰਨਾ ਅਤੇ ਲੋਤੀਦੇਂ ਪ੍ਰਬੰਧ (ਮਮੇਤ ਆਨਲਾਈਨ ਪ੍ਰੀਖਿਆਵਾਂ) ਆਦਿ ਕਰਨਾ ਕਾਲਜ ਦੀ ਜੁੰਮੇਵਾਰੀ ਹੋਵੇਗੀ।

9. ਉਕਤ ਤੋਂ ਇਲਾਵਾ ਯੂਨੀਵਰਸਿਟੀ ਵੱਲੋਂ ਕਿਸੇ ਸਮੇਂ ਵੀ ਕਾਲਜ ਨੂੰ ਇਹਨਾਂ ਕੋਰਸਾਂ ਸਬੰਧੀ ਸਮੇਂ-2 ਤੇ ਹਦਾਇਤਾਂ ਜਾਰੀ ਕੀਤੀਆ ਜਾ ਸਕਦੀਆਂ ਹਨ।

ਜੇਕਰ ਕਾਲਜ ਉਕੜ ਦਰਸਾਈਆਂ ਜਾਂ ਸਮੇਂ-2 ਤੇ ਯੂਨੀਵਰਸਿਟੀ ਵੱਲੋਂ ਜਾਰੀ ਕੀਤੀਆਂ ਹਦਾਇਤਾਂ ਦੀ ਪਾਲਣਾ ਨਹੀਂ ਕਰਦਾ ਤਾਂ ਯੂਨੀਵਰਸਿਟੀ ਵੱਲੋਂ ਉਸ ਦੀ ਮਾਨਤਾ ਰੱਦ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ।

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SMHS Govt. College
Sahibzada Ajit Singh Nagar

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To

The Principal,

SMHS Govt College,

SAS Nagar.

Subject: Certificate Course in Software Development and Programming demanding by Students.

Dear Mam,

As per Memo No. 08-01-2022-3 edu:1/66 dated 07-01-2022 of the Higher Education Department of Punjab, the college has started new certificate courses of Jagat Guru Nanak Dev Punjab State Open University, Patiala. Students of our college want to enroll themselves in Certificate Course in Software Development and Programming . So as per the demand of students kindly allow me to initiate the process of the above course

Thank you

Your's Sincerely

Dr. Amandeep Kaur

Co-ordinator (College)

Attached: Applications of Students to take admission in Software Development and Programming

Principal

SMHS Govt, College Sahibzada Ajit Singh Nagar The Pecincipal, SMHS Gov. College, Mohali.

Respected man,

We are the students of BCA start you college. It is our request you to start the Software development Program in our College and allow us to take admission in this course. We will be very thatful to you.

Yours Sincerely

Jaspreet Hours

Rom Bhatteli

Simar Kour

Shveter

gurpreet Sigh

Tagdeep Rang

Nikhil Kumar

Vineet Sigh

Vardana Davi

Karawir Sigh

Gurjit singh

Sakshi Rathere

vatni

Ajay Kymar Palaka Saine Bennet Send

Jagdeep Kalur Aspanjot Sukhchin Singh

Okhoemi

Reenaderia Okhisani Harsh Bhojsath mukesh Manisha Reabhyot

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ਸ਼ਹੀਦ ਮੇਜਰ ਹਰਮਿੰਦਰਪਾਲ ਸਿੰਘ(ਸੌਰਿਆ ਚੱਕਰ), ਸਰਕਾਰੀ ਕਾਲਜ ਫੇਜ਼-06, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ(ਮੋਹਾਲੀ)

ਜਗਤ ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਪੰਜਾਬ ਸਟੇਟ ਓਪਨ ਯੂਨੀਵਰਸਿਟੀ ਦੇ ਸਰਟੀਫਿਕੇਟ/ ਡਿਪਲੋਮਾ ਕੋਰਸ ਸ਼ੁਰੂ ਕੀਤੇ ਜਾ ਰਹੇ ਹਨ।

NEW SKILL BASED COURSES - A STEP TOWARDS BETTER EMPLOYABILITY

1. Certificate/Diploma in Software Development and Programming

Mr. Balwinder Singh Sandhu

9872647133

Mr. Balwinder Singh Saini

9872557688

Mrs. Navneet Kaur

9915814663

Mr. Amandeep Singh

8146028602

Admissions Open

Last Date: 15 March, 2022

Eligibility: 10+2(Any stream)

Duration of certificate course: 6 months

Fee Structure:

Fee: Rs. 1750/

(Out of which Rs.1000/ will be taken at the time of registration. Rest will be taken in instalments.)

Teaching mode:

Blended (Online/Offline)

For Queries Contact:

Mrs. Harjeet Gujral

Dr. Amandeep Kaur (Co-ordinator) Principal

Post Graduate Department of Punjabi

SMHS Govt. College Mohali

For more information student can usit: www.gcmohall.ac.in, WWW.PSOU.AC.IN

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SMHS Govt. College Sahibzada Ajit Singh Nagar

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Ram Bhateri	Navjot Singh	Gurpreet Singh	Jaspreet Singh	Jagdeep Kaur	Nikhil Kumar	Surinder Singh	Harmanpreet kaur	Jaspreet Kaur	Shveta	Paramvir Singh Somal	Name	
2022	2022	2022	2022	2022	2022	2022	2022	2022	2022	2022	Year	
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Parhlad	Balour Singh	Narinderpal Singh	Balwinder Singh	L. Shamsher Singh	Shakti Singh	Jaspal singh	Tajinder Singh	Sukhpal Singh	Hari singh	Karamjit Singh	Father Name	
Kamla	Balbir Kaur	Satwinder Kaur	Jatinder kaur	Paramjit Kaur	Varsha devi	Raj rani	Gurwinder kaur	Jasvir Kaur	Sushila	Sarabjit Kaur	Mother Name	
Female	Male	Male	Male	Female	Male	Male	Female	Female	Female	Male	Gender	

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	Harsh bhojrath	Sukhwinder kaur	Damini	Rajni	Rajwinder Kaur	Sakshi Rathour	Manisha	Gurwinder singh	Maninder singh	Vineet Singh	Harjit Singh	Simran Kaur
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	Jail dev swami	Nirmal singh	Naresh	Dilbag singh	Sukhdarshan Singh	Ravinder Singh	Ram kishor	Sarbjit singh	Harbans singh	Amarjit Singh	Paramjit Singh	Rajinder Kumar
	Kiran bala	Jasvir kaur	Pushpa	Suman	Seema	Rinku	Anita	Karamjeet kaur	Kulvir kaur	Anita	Jaswinder Kaur	Sarabjit Kaur
	Male	Female	Female	Female	Female	Female	Female	Male	Male	Male	Male	Female

SM. 15 Govt. College Salvingada Ajit Singh Nagar

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PSOU-STUD-22-16979	PSOU-STUD-21-12011	PSOU-STUD-22-48827	PSOU-STUD-22-52278	PSOU-STUD-22-70776	PSOU-STUD-22-94403	PSOU-STUD-22-22421	PSOU-STUD-22-26944	PSOU-STUD-22-87565	PSOU-STUD-22-19741	PSOU-STUD-22-13653	PSOU-STUD-22-88462
Arshdeep	Palak saini	Vandna Devi	PARMEET KAUR	Harpreet kaur	Satnam Singh	Gurmukh Singh	Arpanjot Kaur	Reena devi	Simran	Jashanpreet kaur	Balwinder Kaur
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Mr. Ram gopal	Rakesh saini	Jaswinder Singh	Avtar singh	Gurcharan singh	Karamjit Singh	Jatinderpal Singh	Hardeep Singh	Madan singh	Manga Ram	Gurmeet Singh	Ajit Singh
Mrs. Parbhjeet kaur	rama rani	Dimple Devi	Kuldeep kaur	Seema	Karamjit kaur	Balwinder Kaur	Palwinder kaur	Sukhwinder kaur	Urmila	Balwinder kaur	Anita Rani
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SMHS Govt. College
Sahibzada Ajit Singh Nagar

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	Ashwani Kumar	Prabhjot Singh	Gaganajit Singh	r Singh	Karanveer singh	Pawanpreet Kaur	Carlicongil	Guriit cinch	Sukhchain Singh	Manvir singh		Shivoreet singh rickwal	Manjot singh
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		Hardeep singh	Inderjit Singh Panesar	Malkeet singh	Dhana singh	Balvir Singh	Narender Singh		Sukhvir singh	Gurdeep singh	Ramesh kumar	Baljinder Singh	Darshan Singh
Pushpa devi		Jaspreet kaur	Arvinder Kaur	Baljeet kaur	Kamlesh kaur	Soni Rani	Baljit kaur		Mandeen Kaur	Jaswinder kaur	Santosh kumari	Mandeep kaur	Parminder kaur
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SMHS Govt. College Sahibzada Ajit Singh Nagar

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# Certificate/Diploma in Software Development and Programming

# Objective of the Course:

To provide training in software development, programming languages, and basics of Data Structures. The course also helps the candidates to get acquainted with basics of software development and programming techniques.

## **Learning Outcomes:**

After completion of this course the students would be able to understand the program code written in C, C++, Python, write code in these languages, design OO structure diagrams and will have basic knowledge of databases.

#### **Duration of the Course:**

1) Certificate course: 6 months

2) Diploma:12 months

Eligibility: Any student enrolled in the degree program of the college and having knowledge about the basics of Computers.

Sr.No.	Topics	
Topics of	covered under Certificate Course are Sr No.1, 2 and 3	
1	GC-SDP-01T Programming using C GC-SDP-01P Programming using C Lab	Credits: 6(4 Th. 2 Lab)
2	GC-SDP-02T Object Oriented Analysis And Design Using Uml GC-SDP-02P Object Oriented Analysis And Design Using Uml Lab	Credits: 6(4 Th. 2 Lab)
3	GC-SDP-03T Basics of Data Structure GC-SDP-03P Basics of Data Structure Lab	Credits: 6(4Th. 2 Lab)
Topics c	overed under Diploma Course are Sr No. 1, 2, 3, 4, 5 a	and 6
4	GC-SDP-04T DataBase Management System GC-SDP-04P DataBase Management System	Credits: 6 (4Th. 2 Lab)
5	GC-SDP-05T Programming Fundamentals Using Python GC-SDP-05P Programming Fundamentals Using Python	Credits: 6 (4 Th. 2 Lab)
6	GC-SDP-06P Minor Project	Credits: 6

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# **Programming Using C**

Total Marks: 100 External Marks: 70 Internal Marks: 30

Credits: 4

Pass Percentage: 40%

#### Section A

Unit I: Simple Program logic, Pseudo-code, Problem Identification, Analysis, Flowcharts, and algorithms

Unit II: C Programming: character set, Identifiers and keywords, Data types, Declarations, Statement and symbolic constants, Input-output statements.

Unit III: Operators and Expressions: Arithmetic, relational, logical, unary operators, others operators,

Unit IV: Control statements: Branching, looping using for, while and do-while Statements, Nested control structures, switch, break, continue statements.

#### Section B

Unit V: Functions: Declaration, Definition, Call, passing arguments, call by value, call by reference, Recursion, Use of library functions; Storage classes: automatic, external and static variables.

Unit VI: Arrays: Defining and processing arrays, Passing array to a function, Using multidimensional arrays, Solving matrices problem using arrays.

Unit VII: Strings: Declaration, Operations on strings.

Unit VIII: Pointers: Pointer datatype, Structures: Using structures and union

# Suggested Reading:

- 1. Byron S Gottfried, Programming with C 4<sup>th</sup> Edition (Schaum's Outlines)
- 2. Yashavant Kanetkar, Let Us C, 17<sup>TH</sup> EDITION
- 3. E Balagurusamy, Programming in ANSI C

Principal Course

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### Programming Using C Lab

Total Marks: 100 External Marks: 70 Internal Marks: 30

Credits: 2

Pass Percentage: 40%

The programs in lab will be based on the contents covered in the theory syllabus.

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# Object Oriented Analysis and Design Using UML

Total Marks: 100 External Marks: 70 Internal Marks: 30

Credits: 4

Pass Percentage: 40%

#### Section A

Unit I: Introduction to Object: Object Orientation, Development, Modeling, Object Modelingtechnique. Object modeling: Objects and classes, Links and Association, Generalization and inheritance

Unit II: Grouping constructs, Aggregation, Abstract Classes, Generalization as extension and restriction, Multiple inheritance

Unit III: Design Methodology, Analysis: Object modeling, Dynamic modeling, Functional modeling, Adding operations, Iterating Analysis.

Unit IV: Comparison of methodologies: Structured Analysis/ Structured Design, Jackson Structured Development.

#### Section B

Unit V: Implementation: Using Programming Language, Database System, outside Computer. Programming Style: Object Oriented Style, Reusability, Extensibility, Robustness, Programming in-the-large.

Unit VI: UML: Basics, Emergence of UML, Types of Diagrams. Use Case: Actors, Use Case Diagram, Relationships between Use Cases

Unit VII: Classes: Class Diagram, Classes, Objects, Attributes, Operations, Methods, Interfaces, Constraints, Generalization, Specialization, Association, Aggregation.

Unit VIII: Behavioral Diagrams: Activity Diagram, Collaboration Diagram, Sequence Diagram, State chart Diagram

#### Suggested Reading:

- 1. Ugrasen Suman, Object oriented Analysis and Design Using UML, C engage publications
- 2. Michael Blaha, Object Oriented Modeling and Design with UML IPearson
- 3. Sarnath Ramnath, Object Oriented Analysis and Design, Springer

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# Object Oriented Analysis and Design Using UML Lab

**Total Marks: 100** External Marks: 70 **Internal Marks: 30** 

Credits: 2

Pass Percentage: 40%

The programs in lab will be based on the contents covered in the theory syllabus.

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# **Basics of Data Structure**

Total Marks: 100 External Marks: 70 Internal Marks: 30

Credits: 4

Pass Percentage: 40%

## Section A

Unit I: Basic concept of data, Problem analysis, algorithm complexity, Big O notation and time space trade off

Unit II: Introduction to array, stack, queue, add elements and remove elements in stack and queue at first ,last and nth location, application of stacks and queues,

Unit III: Linear and binary search, bubble sort, insertion sort, selection sort.

Unit IV: Link list, insertion, deletion, traversal

#### Section B

Unit V: Stack using Link list, Queue using link list,

Unit VI: double link list insertion and deletion

Unit VII: Tree terminology, Binary tree, Binary Search tree, tree traversal,

Unit VIII: Insert and remove element in BST, heap, quick sort, merge sort.

# Suggested Reading:

- 1. Seymour Lipschutz, Data Structures (Revised First Edition)| Schaum's Outline Series
- 2. Michael H.Goldwasser, Data Structures and Algorithms in Python

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# Basics of Data Structure Lab

Total Marks: 100 External Marks: 70 Internal Marks: 30

Credits: 2

Pass Percentage: 40%

The programs in lab will be based on the contents covered in the theory syllabus.

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## **Database Management System**

Total Marks: 100 External Marks: 70 Internal Marks: 30

Credits: 4

Pass Percentage: 40%

#### Section A

Unit I: Introduction to DBMS-Basic DBMS terminology, Data independence. Architecture of a DBMS

Unit II: Relational Keys: Primary Key, Foreign Key, Candidate Key, Super Key etc., and Integrity Constraints

Unit III: Relational model, Relational schema Hierarchical model, and Network model.

Unit IV: Normal Forms: Functional Dependency, INF, 2NF, 3NF, BCNF, 4NF, 5NF

#### Section B

Unit V: Structured Query Language- Introduction to SQL/ MySQL, data types, DDL, DML, DCL, querying database tables, Data Definition Language (DDL)

Unit VI: Creating Tables, Inserting and updating values into a Table.

Unit VII: Data Manipulation Language: Various form of SELECT-simple, using special operators, aggregate functions, group by clause, sub query

Unit VIII: Introduction to views, Dropping a VIEW, GRANT command, REVOKE command, COMMIT and ROLLBACK

#### Suggested Reading:

1. James Groff, SQLThe Complete Reference,3rd Edition

2. Monika Pathak, Fundamentals of Database Management System (DBMS), Bookman Publishers

3. S.Sumathi, Fundamentals of Relational Database Management Systems, Springer

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# Database Management System Lab

Total Marks: 100 External Marks: 70 Internal Marks: 30

Credits: 2

Pass Percentage: 40%

The programs in lab will be based on the contents covered in the theory syllabus.

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# **Programming Fundamentals Using Python**

**Total Marks: 100 External Marks: 70 Internal Marks: 30** 

Credits: 4

Pass Percentage: 40%

#### Section A

Unit I: Introduction: Python installation and setup, Command line Basics; Python Objects.

Unit II: Data Structures Basics: Introduction to Python data types, Variable assignments, accepting input from the console, assignment statement,

Unit III: Expressions, operators and their precedence Numbers, String, String methods, Lists

Unit IV: Python Comparison Operators: Chaining comparis on operators with logical operators, Pass Break and continue. write a lot of programs: interest calculation, primarily testing, and factorials.

#### Section B

Unit V: Program Flow control in Python: If Elif and Else statements in python, Loops: for loops, While loops

Unit VI: Methods and Functions in python: Introduction to functions, Def keyword, User defined functions, arguments and parameters, Parameter naming in python

Unit VII: Errors and Exception Handling: Introduction to errors, Built-in errors, raising errors in python

Unit VIII: File handling in Python: Files in python, importing own files, Read and writing text files, working with CSV, XML and JSON files.

#### Suggested Reading:

- 1. Udemy, https://www.udemy.com/course/python-the-complete-python-developer-course/
- 2. Timothy Budd, Exploring Python, TMH, 1st Ed, 2011

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### **Programming Fundamentals Using Python Lab**

Total Marks: 100 External Marks: 70 Internal Marks: 30

Credits: 2

Pass Percentage: 40%

The programs in lab will be based on the contents covered in the theory syllabus.

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# **Minor Project**

Total Marks: 100 External Marks: 70 Internal Marks: 30

Credits: 6

Pass Percentage: 40%

Minor project will be allocated to each student. The student can develop the project in C or python language, The project report will be submitted by the student for evaluation and viva -voce based on project will be conducted.

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# COURSE OUTCOME OF SOFTWARE DEVELOPMENT AND PROGRAMMING

Learning Outcomes

After course completion the students will have the following learning outcomes:

Understanding a functional hierarchical code organization.

Ability to define and manage data structures based on problem subject domain.

Ability to work with textual information, characters and strings.

Ability to work with arrays of complex objects.

Understanding a concept of object thinking within the framework of functional model.

Understanding a concept of functional hierarchical code organization.

Underst anding a defensive programming concept. Ability to handle possible errors during program execution.

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ਨਤੀਜਾ ਅਤੇ ਅੰਕ-ਬਿਊਰਾ-ਕਾਰਡ RESULT-CUM-DETAILED MARKS CARD

(Statement of Marks com Certificate)

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Examination: Aug. 2022 Programme: Continue Course in Software Development and Programming.

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Place : PATTALA Dated : 86-81-2823

Given under the seal of the University

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