

Swami Rama Himalayan University

Office of the Registrar

SRHU/Reg/OO/2022-170

Date: 19th September, 2022

OFFICE ORDER

I am directed to inform that the Academic Council in its 26th Meeting under Agenda Item Nos. 26/11, 26/12, 26/13, 26/14, 26/15 and 26/16 has approved the **recommendations of Board of Studies** for the following programmes under **Himalayan School of Science & Technology**, as enclosed herewith, for implementation:

1. UG Programme - BCA
2. PG Programme - MCA
3. UG Programme - B.Tech. (Computer Science & Engineering)
4. UG Programme - B.Sc. (Hons.) in Data Science for Academic Year 2021-22
5. UG Programme - B.Sc. (Hons.) in Data Science from Academic Year 2022-23
6. UG Programme - B.Tech. (CSE) with specialization in Artificial Intelligence & Machine Learning from Academic Year 2022-23
7. UG Programme - B.Tech. (CSE) with specialization in Data Science from Academic Year 2022-23
8. UG Programme - B.Tech. (CSE) with specialization in DevOps from Academic Year 2022-23
9. PG Programme - M.Tech. (Computer Science & Engineering) from Academic Year 2022-23

By Order,


19/9/22
Registrar

Encls.: As above.

Copy to: Hon'ble Chancellor
Hon'ble Vice Chancellor
Pro Vice Chancellor
Controller of Examinations
Principal, Himalayan School of Science & Technology

} for kind information please

BOARD OF STUDIES

Of

BACHELOR OF SCIENCE (HONOURS) DATA SCIENCE

May, 2022

(Effective from Academic Year 2022-23)



**Department of
Applied Sciences & Humanities**

**Himalayan School of Science & Technology
SWAMI RAMA HIMALAYAN UNIVERSITY
Swami Ram Nagar, Jolly Grant, Doiwala
Dehradun-248016**


Registrar
Swami Rama Himalayan University

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Department of Applied Sciences & Humanities

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Swami Rama Himalayan University

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Office of the Registrar

SRHU/Reg/OO/2022-119

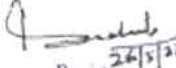
Date: 26th May, 2022

OFFICE ORDER

In accordance with duly approved Statute 5.07 of the University, the Hon'ble Vice Chancellor has re-constituted the Board of Studies for UG programme - B.Sc. (Hons.) Data Science under Himalayan School of Science & Technology (HSST), as hereunder:

	Dr. Ramesh Chand Ramola, Principal, HSST	Chairperson
As per the provisions of Statute 5.07(c) of the University, Associate Professor nominated by the Vice Chancellor	Dr. Mukesh Bijalwan, Associate Professor, HSST	Member
As per the provisions of Statute 5.07(d) of the University, 02 (Two) external subject experts nominated by the Vice Chancellor	Dr. Govind Prasad, Former Professor, Department of Mathematics, IIT Roorkee	Member
	Dr. Durga Toshniwal, Professor & Head, Mehta Family School of Data Science & Artificial Intelligence, IIT Roorkee	Member

By Order,


26/5/22
Registrar

Copy to: Hon'ble Chancellor }
Hon'ble Vice Chancellor } for kind information please
Pro Vice Chancellor }
Principal, HSST
Chairperson, Board of Studies
All concerned members of the Board of Studies


Registrar
Swami Rama Himalayan University

**Swami Rama Himalayan University
Office of the Registrar**

SRHU/Reg/Int/2022-176

Date: 26th May, 2022

Meeting Notice

The Meeting of the Board of Studies for UG programme - B.Sc. (Hons.) Data Science under Himalayan School of Science & Technology (HSST), will be held on **30th May 2022 (Monday) at 12:00 noon in Hybrid mode.**

The Agenda of the meeting shall be as follows:

1. To recommend, upon reference to it by the faculty, the courses of study, curriculum and methods of assessment in the subject or group of subjects within its purview.
2. To recommend programme objective and course outcome
3. To recommend books, including text-books, supplementary reading, reference books and other study material for such courses of study.
4. To advise the faculty or faculties concerned regarding improvements in the courses of study.
5. To recommend organization of orientation and refresher courses in the subject.

Members of the said Board of Studies are requested to please make it convenient to attend the meeting.



**Dr. Susheela Sharma
Registrar**

Copy to: Hon'ble Chancellor
Hon'ble Vice Chancellor } for kind information please
Pro Vice Chancellor
Principal, HSST
Chairperson, Board of Studies
All concerned members of the Board of Studies



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Swami Rama Himalayan University

Board of Studies

BOS of Bachelor of Science (Honors) in Data Science was conducted on 30th May, 2022 (Monday) in the Hybrid mode.

Attendance

S. No.	Name	Signature
1	Dr. Ramesh Chand Ramola Principal, HSST (Chairperson)	
2	Dr. Mukesh Bijalwan, Associate Professor HSST (Member)	
3	Dr. Govind Prasad, Former Professor, Dept. of Mathematics, IIT-Roorkee (Member)	
4	Dr. Durga Toshniwal, Professor & Head, Mehta Family School of Data Science & Artificial Intelligence, IIT-Roorkee (Member)	



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Minutes of the Meeting

In pursuance to the notification SRHU/Reg./Int./2022-176 dated 26th May, 2022 the meeting of board of studies of B. Sc. (Hons.) program in Data Science was held in the HSST on 30th May 2022 at 12.00 PM in the presence of following members in the Hybrid (Online/Offline) mode.

1. Dr. Ramesh Chand Ramola: Chairperson
2. Dr. Mukesh Bijalwan: Member
2. Dr. Govind Prasad: Member
3. Dr. Durga Toshniwal: Member

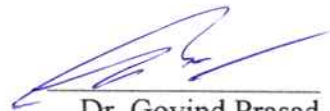
The Chairman welcomed the members and brief the members about propose program and its curriculum. The committee discussed the program structure and syllabus in detail and make following appropriate suggestions.

1. Credit of Introduction to Excel lab shall be merge with Descriptive Statistics.
2. The following courses of this program need to be reshuffled.
 - a) Introduction to Data Science using Python
 - b) Applied Data Science using Python
 - c) Data Structures
3. Object Oriented Programming should be split into two parts(using C++ and Java)
4. Computer Networks should be replaced by Design and Analysis of Algorithm.
5. Data Analytics with R course should be removed.
6. Discipline Specific Elective I and II Courses shall be represent in single pool for Semester V/VI.
7. Applied Mathematics & statistics courses of this structure should be part of B.Tech with specialization in Data Science and AI&ML.

The same have been incorporated in the board of studies. The chairman thanked all the members for their valuable suggestion and active participation.



Dr. Durga Toshniwal
Member



Dr. Govind Prasad
Member



Dr. Mukesh Bijalwan
Member



Dr. Ramesh Chand Ramola
Chairperson



Registrar
Swami Rama Himalayan University

Goals and Objectives

Program Goals:	
GOAL1	Provide students with knowledge and skills in both computer science and statistical modeling for data-intensive problem solving and scientific discovery.
GOAL2	Equip students with software engineering and machine learning skills to design and implement efficient, data-driven solutions to real world.
GOAL3	Train students for careers and advanced studies in a wide range of applied computer science, engineering, business, and biotechnology disciplines.
GOAL4	Develop articulate, conscientious leaders and problem solvers who are committed to contributing to their fields and society.
GOAL5	Provide students with a broad foundation of knowledge and skills and cultivate a commitment to life-long learning.
Program Educational Objectives (PEOs):	
PEO1	Provide students with knowledge and skills in both computer science and statistical modeling for data-intensive problem solving and scientific discovery.
PEO2	Equip students with software engineering and machine learning skills to design and implement efficient, data-driven solutions to real world.
PEO3	Train students for careers and advanced studies in a wide range of applied computer science, engineering, business, and biotechnology disciplines.
PEO4	Develop articulate, conscientious leaders and problem solvers who are committed to contributing to their fields and society.
PEO5	Provide students with a broad foundation of knowledge and skills and cultivate a commitment to life-long learning.
Program Outcomes (POs):	
PO1	Knowledge: Apply the knowledge of mathematics, science, fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem Analysis Capability: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Analysis, Design & Research /Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and Modern engineering and IT tools including prediction and

	modeling to complex Engineering activities with an understanding of the limitations.
PO6	The Society & Cultural Responsibility: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and Sustainability: Understand the impact of the professional Engineering solutions in societal and environmental contexts, and demonstrate the Knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex engineering activities with the Engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project Management and Finance: Demonstrate knowledge and understanding of the Engineering and management principles and apply these to one's own work, as a Member and leader in a team, to manage projects and in multidisciplinary Environments.
PO12	Life-Long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
PROGRAM SPECIFIC OUTCOMES (PSOs):	
PSO1	Acquire knowledge for foundation skills, advanced analytics and apply those skills for design and development of machine learning models and the solution of data science related problems for real time applications.
PSO2	Ability to gain wide spectrum of skills related to data science to confidently join data Science teams for the innovation and research.

Program Structure
Of
BACHELOR OF SCIENCE (HONOURS)
DATA SCIENCE

May, 2022

Department of
Applied Sciences & Humanities
Faculty of Science & Technology
SWAMI RAMA HIMALAYAN UNIVERSITY
Swami Ram Nagar, Jolly Grant, Doiwala Dehradun-248016

SWAMI RAMA HIMALAYAN UNIVERSITY

Faculty of Science & Technology

B.SC. (Hons.) Data Science Programme (effective from Academic Year 2022-23)

1 YEAR SEM-I

S.No.	COURSE CODE		CATEGORY	COURSE TITLE	PERIODS			CONTACT HOURS (L+T+P)	CREDITS		
	Theory	Practical/Practices			L	T	P		Theory	Practical/Practices	Total
1	BDS111		AMS	Calculus	3	1	0	4	4	0	4
2	BDS112		AMS	Descriptive Statistics	3	1	0	4	4	0	4
3	BDS113		CC	Introduction to C Programming	3	1	0	4	4	0	4
4	BDS114		CC	Digital Electronics	3	1	0	4	4	0	4
5	BDS115		AECC	English Language Skills	2	0	0	2	2	0	2
6	EVS117		AECC/AUC	Environmental Studies	3	0	0	3	0	0	0
7	HVE117		AUC	Human Values & Professional Ethics	2	0	0	2	0	0	0
8		BDP113	CC	Introduction to C Programming	0	0	2	2	0	1	1
9		BDP114	CC	Digital Electronics	0	0	2	2	0	1	1
10		BDP115	AECC	English Language Skills	0	0	2	2	0	1	1
11		BDS112	AMS	Descriptive Statistics	0	0	2	2	0	1	1
TOTAL					19	4	8	31	18	4	22



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Swami Rama Himalayan University



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Faculty of Science & Technology											
B.SC. (Hons.) Data Science Programme (effective from Academic Year 2022-23)											
1 YEAR SEM-II											
S.No.	COURSE CODE		CATEGORY	COURSE TITLE	PERIODS			CONTACT HOURS (L+T+P)	CREDITS		
	Theory	Practical/Practices			L	T	P		Theory	Practical/ Practices	Total
1	BDS121		AMS	Discrete Mathematics	3	1	0	4	4	0	4
2	BDS122		CC	Probability and Distribution Theory	3	1	0	4	4	0	4
3	BDS123		CC	Object Oriented Programming using C++	3	1	0	4	4	0	4
4	BDS124		CC	Data Structures	3	1	0	4	4	0	4
5	BDS125		CC	Data Warehousing and Mining	3	0	0	3	3	0	3
6	DMT126		AUC	Disaster Management	2	0	0	2	0	0	0
7		BDP123	CC	Object Oriented Programming using C++	0	0	2	2	0	1	1
8		BDP124	CC	Data Structures	0	0	2	2	0	1	1
9		YHP121	AUC	Yoga & Health	0	0	2	2	0	0	0
TOTAL					17	4	6	27	19	2	21


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SWAMI RAMA HIMALAYAN UNIVERSITY

Faculty of Science & Technology

B.SC. (Hons.) In Data Science Programme (effective from Academic Year 2022-23)

2 YEAR SEM-III

S.No.	COURSE CODE		Category	COURSE TITLE	PERIODS			CONTACT HOURS (L+T+P)	CREDITS		
	Theory	Practical/Practices			L	T	P		Theory	Practical/ Practices	Total
1	BDS231		AMS	Linear Algebra	3	1	0	4	4	0	4
2	BDS232		CC	Software Engineering	3	0	0	3	3	0	3
3	BDS233		CC	Database Management Systems	3	1	0	4	4	0	4
4	BDS234		CC	Introduction to Data Science using Python	3	1	0	4	4	0	4
5	BDS235		CC	Object Oriented Programming using Java	3	0	0	3	3	0	3
6		BDP233	CC	Database Management Systems	0	0	2	2	0	1	1
7		BDP234	CC	Introduction to Data Science using Python	0	0	2	2	0	1	1
8		BDP235	CC	Object Oriented Programming using Java	0	0	2	2	0	1	1
9		PDP231	AECC	Personality Development Programme -I	0	0	2	2	0	0	0
10			SEC	Skill Enhancement Certification/Badge-I	0	0	2	2	0	0	0
TOTAL					15	3	10	28	18	3	21



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Swami Rama Himalayan University

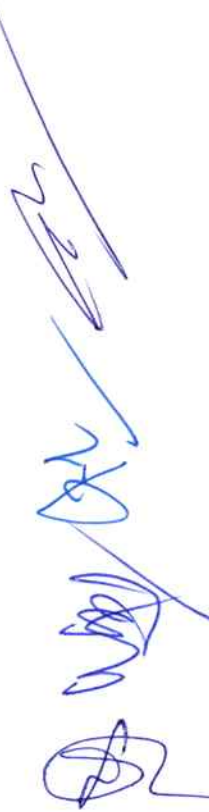


SWAMI RAMA HIMALAYAN UNIVERSITY
Faculty of Science & Technology
B.SC. (Hons.) In Data Science Programme (effective from Academic Year 2022-23)

2 YEAR SEM-IV

S.No.	COURSE CODE		Category	COURSE TITLE	PERIODS			CONTACT HOURS (L+T+P)	CREDITS		
	Theory	Practical/Practices			L	T	P		Theory	Practical/ Practices	Total
1	BDS241		CC	Estimation and Inferential Statistics	3	1	0	4	4	0	4
2	BDS242		CC	Introduction to Artificial Intelligence	3	0	0	3	3	0	3
3	BDS243		CC	Applied Data Science using Python	3	1	0	4	4	0	4
4	BDS244		CC	Operating System	3	0	0	3	3	0	3
5	BDS245		CC	Design and Analysis of Algorithms	3	1	0	4	4	0	4
6		BDP243	CC	Applied Data Science using Python	0	0	2	2	0	1	1
7		BDP243	CC	Operating System	0	0	2	2	0	1	1
8		BDP245	CC	Design and Analysis of Algorithms	0	0	2	2	0	1	1
9		PDP241	AECC	Personality Development Programme-II	0	0	2	2	0	0	0
10			SEC	Skill Enhancement Certification /Badge-II	0	0	2	2	0	0	0
TOTAL					15	3	10	28	18	3	21


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SWAMI RAMA HIMALAYAN UNIVERSITY Faculty of Science & Technology B.SC. (Hons.) In Data Science Programme (effective from Academic Year 2022-23) 3 YEAR SEM-V											
S.No.	COURSE CODE		Category	COURSE TITLE	PERIODS			CONTACT HOURS (L+T+P)	CREDITS		
	Theory	Practical/Practices			L	T	P		Theory	Practical/ Practices	Total
1	BDS351		CC	Machine Learning for Data Science	3	0	0	3	3	0	3
2	BDS352		AMS	Operations Research	3	1	0	4	4	0	4
3	BDS353		CC	NoSQL Databases	3	0	0	3	3	0	3
5	DDS35*		DSEC	Discipline Specific Elective-I	3	0	0	3	3	0	3
4	DDS35*		DSEC	Discipline Specific Elective-II	3	0	0	3	3	0	3
6	GDS35		GEC	Generic Elective Course-I*	3	0	0	3	3	0	3
7		BDP351	CC	Machine Learning for Data Science	0	0	2	2	0	1	1
8		BDP353	CC	NoSQL Databases	0	0	2	2	0	1	1
9		PPW-351/IBL-351	PW	Project Work / Industry-Based Learning Program Phase-I	0	0	6	6	0	3	3
10			SEC	SSC/Q8101- NSQF Level -6 Job role: AI - Data Quality Analyst **	0	0	2	2	0	0	0
TOTAL					18	1	12	31	19	5	24


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SWAMI RAMA HIMALAYAN UNIVERSITY											
Faculty of Science & Technology											
B.SC. (Hons.) In Data Science Programme (effective from Academic Year 2022-23)											
3 YEAR SEM-VI											
S.No.	COURSE CODE		Category	COURSE TITLE	PERIODS			CONTACT HOURS (L+T+P)	CREDITS		
	Theory	Practical/Practices			L	T	P		Theory	Practical/ Practices	Total
1	BDS361		CC	Introduction to Deep Learning	3	0	0	3	3	0	3
2	BDS362		CC	Business Intelligence Tools and Applications	3	0	0	3	3	0	3
3	DDS363		DSEC	Discipline Specific Elective Course-III	3	0	0	3	3	0	3
4	DDS36*		DSEC	Discipline Specific Elective-IV	3	0	0	3	3	0	3
5	GDS36*		GEC	Generic Elective Course-II*	3	0	0	3	3	0	3
6		BDP361	CC	Introduction to Deep Learning	0	0	2	2	0	1	1
7		PPW-361/IBL-361	PW	Project Work / Industry-Based Learning Program - Phase-II	0	0	10	10	0	5	5
8			SEC	SSC/Q0401- NSQF Level-7 Job role: AI-Junior Data Associate**	0	0	2	2	0	0	0
TOTAL					15	0	14	29	15	6	21

**** At the end of Fifth and Sixth semester, online independent assessment will be organized through NASSCOM, Sector Skill Council, IT-ITes as per performance criteria using following steps/components 1. Theory 2. Skills Practical 3. Role Plays 4. Viva as per Job Role and Qualification Packs .On successful assessment NSQF-Level 6 and NSQF-Level 7 Certificate will be issued by NSDC & NASSCOM.**


Registrar
Swami Rama Himalayan University



S.No	Discipline Specific Elective Course-I/II						Generic Elective Course-I*					
	Course Code	Course Title	L	T	P	C	Course Code	Course Title	L	T	P	C
1	DDS351	Introduction to Bioinformatics	3	0	0	3	GDS351	Study Design & Health Data Management	3	0	0	3
2	DDS352	Introduction to Cloud Computing	3	0	0	3	GDS352	Multivariate Analysis	3	0	0	3
3	DDS353	Internet of Things (IoT)	3	0	0	3	GDS353	Statistical Quality Control	3	0	0	3
1	DDS354	Computer Vision	3	0	0	3	GDS354	Applied Regression & Time Series Analysis	3	0	0	3
2	DDS355	Introduction to Natural Language Processing	3	0	0	3	GDS355	Social Media Analytics	3	0	0	3
3	DDS356	Product Development	3	0	0	3						
S.No	Discipline Specific Elective Course-III/IV						Generic Elective Course-II*					
	Course Code	Course Title	L	T	P	C	Course Code	Course Title	L	T	P	C
1	DDS361	Fundamentals of Big Data Analytics	3	0	0	3	GDS361	Business Laws	3	0	0	3
2	DDS362	Data Visualization Techniques	3	0	0	3	GDS362	Entrepreneurship Development	3	0	0	3
3	DDS363	Digital Image Processing	3	0	0	3	GDS363	Business Economics And Financial Analysis	3	0	0	3
1	DDS364	Cyber Security	3	0	0	3	GDS364	Financial Mathematics	3	0	0	3
2	DDS365	Software Testing	3	0	0	3	GDS365	Business Process Management	3	0	0	3
3	DDS366	Software Quality Assurance and Management	3	0	0	3						

Course Category						
CC-MS	Core Course- Mathematics & Statistics	CC-CS	Core Course-Computer Science	DSEC	Discipline Specific Elective Course	Generic Elective Course
AUC	Audit Course	AECC	Ability Enhancement Compulsory Course	PW	Project Work	Skill Enhancement Course

Semester	I	II	III	IV	V	VI	Total Credits
Credits	22	21	21	21	24	21	130
Total credits to be earned for the award of Degree : 130							

*The Generic Elective courses may be conducted online/ offline in credit transfer mode in the discipline related to Bioinformatics, Health Sciences, Finance, Management, Economics, Actuarial Science, Applied Mathematics and Statistics either using MOOCS through Study Webs of Active Learning for Young Aspiring Minds (SAWAYAM) Portal or as prescribed by the Department, pursuant to relevant staff, resources and current topic of interest considerations in the related domains.

 7

Registrar
Swami Rama Himalayan University



Study & Evaluation Scheme

**BACHELOR OF SCIENCE (HONOURS)
PROGRAMME**

IN

DATA SCIENCE

(Effective from academic year 2022-23)

SWAMI RAMA HIMALAYAN UNIVERSITY

Faculty of Science & Technology

Study and Evaluation Scheme: B.SC. (Hons.)-Data Science Programme (effective from Academic Year 2022-23)

1 YEAR SEM-I

S. No.	COURSE CODE		Category	COURSE TITLE	PERIODS			EVALUATION SCHEME								CONTACT HOURS (L+T+P)	CREDITS			
	Theory	Practical			L	T	P	THEORY				PRACTICAL/PRACTICES					GRAND TOTAL	Theory	Practical/Practices	Total
								SEI	SEII	DDA	ESE	TOTAL	INTERNAL	ESE	TOTAL					
1	BDS111		AMS	Calculus	3	1	0	20	20	10	100	150	0	0	0	150	4	4	0	4
2	BDS112	BDP112	AMS	Descriptive Statistics	3	1	2	20	20	10	100	150	20	30	50	200	6	4	1	5
3	BDS113	BDP113	CC	Introduction to C Programming	3	1	2	20	20	10	100	150	20	30	50	200	6	4	1	5
4	BDS114	BDP114	CC	Digital Electronics	3	1	2	20	20	10	100	150	20	30	50	200	6	4	1	5
5	BDS115	BDP115	AECC	English Language Skills	2	0	2	20	20	10	50	100	20	30	50	150	4	2	1	3
6	EVS117		AECC/AUC	Environmental Studies	3	0	0	20	20	10	100	150	0	0	0	150	3	0	0	0
7	HVE117		AUC	Human Values & Professional Ethics	2	0	0	20	20	10	50	100	0	0	0	100	2	0	0	0
TOTAL					19	4	8	140	140	70	600	950	80	120	200	1150	31	18	4	22

1 YEAR SEM-II

S.No.	COURSE CODE		Category	COURSE TITLE	PERIODS			EVALUATION SCHEME								CONTACT HOURS (L+T+P)	CREDITS		
					THEORY			PRACTICAL/PRACTICES					GRAND TOTAL						
	Theory	Practical			L	T	P	SEI	SEII	DDA	ESE	TOTAL	INTERNAL	ESE	TOTAL	Theory	Practical/ Practices	Total	
1		BDS121	AMS	Discrete Mathematics	3	1	0	20	20	10	100	150	0	0	0	150	4	0	4
2		BDS122	CC	Probability and Distribution Theory	3	1	0	20	20	10	100	150	0	0	0	150	4	0	4
3		BDS123	CC	Object Oriented Programming using C++	3	1	2	20	20	10	100	150	20	30	50	200	4	1	5
4		BDS124	CC	Data Structures	3	1	2	20	20	10	100	150	20	30	50	200	4	1	5
5		BDS125	CC	Data Warehousing and Mining	3	0	0	20	20	10	100	150	0	0	0	150	3	0	3
6		DMT126	AUC	Disaster Management	2	0	0	20	20	10	50	100	0	0	0	100	2	0	0
7		YHP121	AUC	Yoga & Health	0	0	2	0	0	0	0	0	25	25	50	50	2	0	0
TOTAL					17	4	6	120	120	60	550	850	85	115	150	1000	19	2	21

L: Lecture, T: Tutorial, P:Practical/Practices, C/A: Continuous Internal Assessment, Y/A: Teacher's Assessment (A/G/S/P/Q/V): Assignment/Group Discussion/Seminar/Presentation/Quiz/Viva Voce) ESE: End Semester Examination;
 * AUDIT COURSE is a non-credit course in addition to prescribed range of credits for audit purpose only;
 **COMPULSORY AUDIT COURSE is a compulsory non-credit course and students shall be required to obtain the pass grade within their programme of study for award of degree.



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Swami Rama Himalayan University



SWAMI RAMA HIMALAYAN UNIVERSITY

Faculty of Science & Technology

Study and Evaluation Scheme: B.Sc. (Hons.)-Data Science Programme (effective from Academic Year 2022-23)

2 YEAR SEM-III																					
S.No.	COURSE CODE		Category	COURSE TITLE	PERIODS				EVALUATION SCHEME							GRAND TOTAL	CONTACT HOURS (L+T+P)	CREDITS			
	Theory	Practical/Practices			L	T	P	THEORY			PRACTICAL/PRACTICES				Theory			Practical/Practices	Total		
								SEI	SEII	DDA	ESE	TOTAL	INTERNAL	ESE		TOTAL					
1		BDS231	AMS	Linear Algebra	3	1	0	20	20	20	10	100	150	0	0	0	150	4	4	0	4
2		BDS232	CC	Software Engineering	3	0	0	20	20	20	10	100	150	0	0	0	150	3	3	0	3
3		BDS233	CC	Database Management Systems	3	1	2	20	20	20	10	100	150	20	30	50	200	6	4	1	5
4		BDS234	CC	Introduction to Data Science using Python	3	1	2	20	20	20	10	100	150	20	30	50	200	6	4	1	5
5		BDS235	CC	Object Oriented Programming using Java	3	0	2	20	20	20	10	100	150	20	30	50	200	5	3	1	4
6		PDP231	AECC	Personality Development Programme-I	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0
7			SEC	Skill Enhancement Certification/Badge-I	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0
				TOTAL	15	3	10	100	300	50	500	750	750	60	90	150	900	28	18	3	21

2 YEAR SEM-IV																					
S.No.	COURSE CODE		Category	COURSE TITLE	PERIODS				EVALUATION SCHEME							GRAND TOTAL	CONTACT HOURS (L+T+P)	CREDITS			
	Theory	Practical/Practices			L	T	P	THEORY			PRACTICAL/PRACTICES				Theory			Practical/Practices	Total		
								SEI	SEII	DDA	ESE	TOTAL	INTERNAL	ESE		TOTAL					
1		BDS241	CC	Estimation and Inferential Statistics	3	1	0	20	20	20	10	100	150	0	0	0	150	4	4	0	4
2		BDS242	CC	Introduction to Artificial Intelligence	3	0	0	20	20	20	10	100	150	0	0	0	150	3	3	0	3
3		BDS243	CC	Applied Data Science using Python	3	1	2	20	20	20	10	100	150	20	30	50	200	6	4	1	5
4		BDS244	CC	Operating System	3	0	2	20	20	20	10	100	150	20	30	50	200	5	3	1	4
5		BDS245	CC	Design and Analysis of Algorithms	3	1	2	20	20	20	10	100	150	20	30	50	200	6	4	1	5
7		PDP241	AECC	Personality Development Programme-II	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0
8			SEC	Skill Enhancement Certification/Badge-II	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0
				TOTAL	15	3	10	100	300	50	500	750	750	60	90	150	900	28	18	3	21


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3 YEAR SEM-V																	
S.No.	COURSE CODE		COURSE TITLE	PERIODS			EVALUATION SCHEME							CONTACT HOURS (L+T+P)	CREDITS		
							THEORY			PRACTICAL/PRACTICES							
	Theory	Practical /Practices		Category	L	T	P	SEI	SEII	DDA	ESE	TOTAL	INTERNAL	ESE	TOTAL	Theory	Practical/ Practices
1	BDS351	BDP351	CC	3	0	2	20	20	10	100	150	20	30	50	3	1	4
2	BDS352		AMS	3	1	0	20	20	10	100	150	0	0	0	4	0	4
3	BDS353	BDP353	CC	3	0	2	20	20	10	100	150	20	30	50	3	1	4
5	DDS35*		DSEC	3	0	0	20	20	10	100	150	0	0	0	3	0	3
4	DDS35*		DSEC	3	0	0	20	20	10	100	150	0	0	0	3	0	3
6	GDS35		GEC	3	0	0	20	20	10	100	150	0	0	0	3	0	3
7			Skill Enhancement Certification Badge-III	0	0	2	0	0	0	0	0	0	0	0	2	0	0
8		PPW-351/TBI-351	PW	0	0	6	0	0	0	0	0	50	100	150	6	3	3
			Project Work / Industry-Based Learning Program Phase-I	18	1	12	120	120	60	600	900	90	160	250	19	5	24
			TOTAL														

3 YEAR SEM-VI

S.No.	COURSE CODE		Category	COURSE TITLE	PERIODS						EVALUATION SCHEME						CREDITS			
					THEORY						PRACTICAL/PRACTICES									
	L	T			P	SEI	SEII	DDA	ESE	TOTAL	INTERNAL	ESE	TOTAL	GRAND TOTAL	CONTACT HOURS (L+T+P)	Theory	Practical/ Practices	Total		
1	BDS361	BDP361	CC	Introduction to Deep Learning	3	0	2	20	20	10	100	150	20	30	50	200	5	3	1	4
2	BDS362		CC		3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3
3	DDS363		DSEC		3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3
4	DDS36*		DSEC		3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3
5	GDS36*		GEC		3	0	0	20	20	10	100	150	0	0	0	150	3	3	0	3
6		PPW-361/TBI-361	PW	Project Work / Industry-Based Learning Program - Phase -II	0	0	10	0	0	0	0	0	100	200	300	300	10	0	5	5
					15	0	12	100	100	50	500	750	120	230	350	1100	27	15	6	21
				TOTAL																

*The Generic Elective courses may be conducted online/ offline in credit transfer mode in the discipline related to Bioinformatics, Health Sciences, Finance, Management, Economics, Actuarial Science, Applied Mathematics and Statistics either using MOOCS through Study Webs of Active Learning for Young Aspiring Minds (SAWAYAM) Portal or as prescribed by the Department, pursuant to relevant staff, resources and current topic of interest considerations in the related domains.



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