Department of
Statistics & Operations Research
ALIGARH MUSLIM UNIVERSITY
ALIGARH – 202002

CHAIRMAN

D.No. 608 /ST
Dated : 21.01.2021

Joint Controller
(Admissions)
AMU, Aligarh.
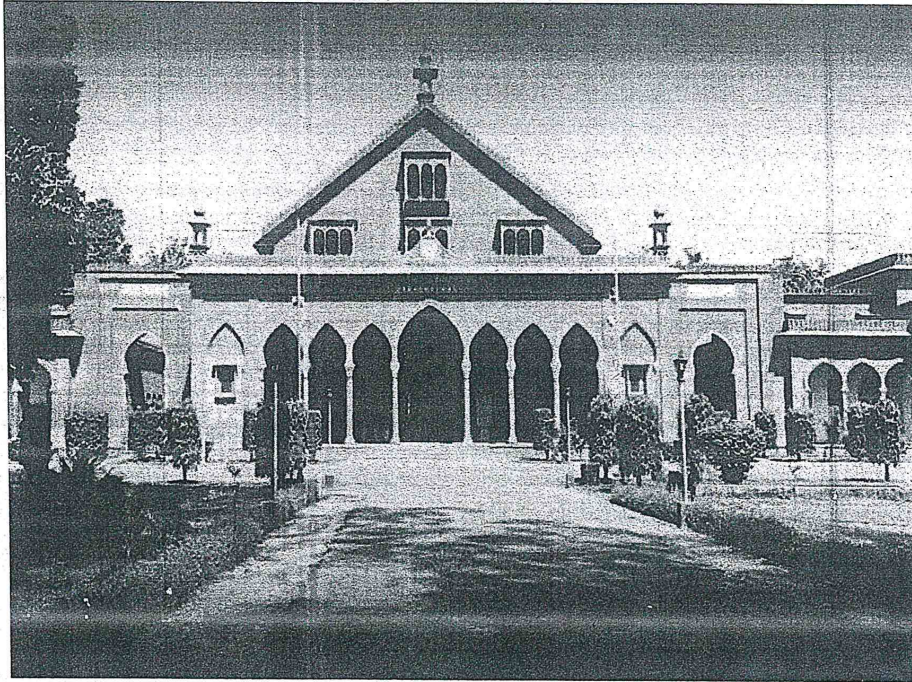
Through: The Dean, Faculty of Science

Kindly refer to your letter D.No.2082/ADMS. dated 12.01.2021 regarding the subject "Finalization of Guide to Admissions for Academic Session 2021-2022". In this regard, it is submitted that Academic Council in its meeting held on January 11, 2021 has recommended the new course M.Sc. (Data Science) from the session 2021-22 in the Department of Statistics & Operations Research in its Minutes at Item No. 07. The details of the programme are enclosed for consideration of the Admission Committee scheduled to be held on 31.01.2021.

21-1-21

(Prof. Athar Ali Khan)
CHAIRMAN

Chairman
Dept. of Statistics & O.R.
A.M.U., Aligarh

Encl.: Copy of Course Structure of M.Sc. (Data Science). 7 pages

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POST GRADUATE PROGRAMME IN DATA SCIENCE

Course offered

by

Department of Statistics and Operations Research, Aligarh Muslim University

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Introduction

As the role of technology becomes multi-fold in every sector, it generates huge amounts of information that can yield valuable insights about the field. There is a huge amount of data produced everywhere. Just Google receives 2 million search queries every minute and Facebook users post around 700 thousand pieces of content in the same amount of time. This has led to a boom in the data industry in the last ten years. There are some analytical tools which help us to orientate in this huge amount of data, to make decisions easier and to speed up the processes. Data science helps businesses and industries make sense of the vast volumes of information for further growth and development. Investing in analytics is the difference between successful and failing companies in the present and the years to come.

Analytics tools can either qualitative such as quality of life surveys in the medical field or quantitative such as statistical tools or software. They extract, and bifurcate useful data from unnecessary information and analyze them to come up with patterns and numerical data that can help in making a profitable change. Data science is an integral component of making strategies in all major organizations as it helps them predict customer trends and behaviors, increase business productivity, and make evidence-backed decisions.

Our aim of introducing this course is that, on completion of M.Sc. in Data Science programme, graduates will be able to become a skilled Data Scientist in industry, academia, or government sector. Also make able to independently carry out research/investigation to solve practical problems.

"Without data you're just another person with an opinion"

Program at a glance

Course Name	:	M. Sc. in Data Science
Nature	:	Regular, Full Time (Semester System)
Duration	:	2 Years (4 Semesters)
Eligibility Criteria	:	B. Tech/ B.E./B. Arch with 55% marks in aggregate OR
		B.A./B.Sc./BCA/BIT from recognized university with 55% marks in aggregate and must have studied Statistics/ Mathematics at the qualifying examination.
Mode of Admission	:	National level written test conducted by AMU
Theoretical Papers	:	64 Credits
Lab Papers	:	20 Credits
Project	:	12 Credits
Intake	:	20+ 5(NRI)

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Significance of the Program

The world as we know it will continue to be increasingly driven by data. From a corporate perspective, data analytics is the tool that helps business owners in this day and age both understand how their business is faring and pinpoint areas that need attention.

Together with tools such as machine learning and artificial intelligence, part of the data analytics picture is data mining, the process of collating large sets of data and analyzing them to extract useful information from a broad test base. As a result, businesses can utilize data analytics to better understand their client base in terms of customer trends and behaviors. Data Science is the key to driving productivity, efficiency and revenue growth. There are so many ways data analytics can be useful and for the most part the how depends on the organization but at its core it's all about helping that organization make the best decisions to get their business where it needs to be.

This also includes the problems that arise, large and small, which could lead to losses for the company, among other things. Data Science support a business in detecting those problems and setting out a forecast of their potential impact. Thus, when used correctly and driven by skilled data analysts, those data sets are highly valuable in helping an organization make informed decisions in the running of the business and helping them to mitigate any losses.

Data Science has found its way across a variety of industries from banking and healthcare to technology, manufacturing, and education.

Objectives

The primary objective of the MSc. in Data Science program is to develop skilled professional workforce that is prepared to address the increasing needs in the rapidly expanding area of big data analytics. The program aims to provide skills in quantitative data analysis, data mining, data modeling and prediction, data storage and management, big data processing, data visualization, multimedia big data, programming and communication skills. Software based courses/ training and a large number of practical case studies have been integrated in the program to boost the learner confidence and market acceptability.

Outcomes

On completion of M.Sc. Data Science programme, graduates will be able to

- Become a skilled Data Scientist in industry, academia, or government.
- Use specialist software tools for data storage, analysis and visualization.
- Independently carry out research/investigation to solve practical problems.

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Semester II

Paper Title	Course Code	Course Type	Periods per week (L+P)	Credits	Sessional Marks	Final Marks	Total Marks
Bayesian Data Analysis	DSM2001	C	3+1	4	30	70	100
Machine Learning	DSM2002	C	3+1	4	30	70	100
Multivariate Methods in Data Science	DSM2003	C	3+1	4	30	70	100
Programming for Data Science with Python	DSM2004	C	3+1	4	30	70	100
Operations Research	DSM2005	C	3+1	4	30	70	100
Lab Course-III	DSM2071	C	3	4	40	60	100
Lab Course-IV	DSM2072	C	3	4	40	60	100
		Total Credit		28			

Semester III

Paper Title	Course Code	Course Type	Periods per week (L+P)	Credits	Sessional Marks	Final Marks	Total Marks
Time Series Analysis	DSM3001	C	3+1	4	30	70	100
Big Data Analytics	DSM3002	C	3+1	4	30	70	100
Marketing Research and Analytics	DSM3003	C	3+1	4	30	70	100
Spatial Statistics for Remotely Sensed Images	DSM3004	C	3+1	4	30	70	100
Cloud Computing	DSM3005	C	3+1	4	30	70	100
Open Elective	DSM3091	C	4	4	30	60	100
Lab Course-V	DSM3071	C	4	4	40	60	100
		Total Credit		28			

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Detailed Syllabus for Entrance test of M.Sc. (Data Science)

Section I

Mathematics (25 Questions)

Matrix algebra, differential and integral calculus, numerical analysis

Section II

Statistics (25 Questions)

Descriptive statistics, probability and distribution theory, basics of statistical inference, basics of design of experiments and sampling surveys, linear programming

Section III

Computer Science (25 Questions)

Basic elements of computer science, C/C++ programming and introduction to R language

Section IV

General awareness and reasoning of U.G. level (25 Questions)

Logical reasoning, analytical reasoning, mathematical reasoning, verbal and non-verbal reasoning

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DEPARTMENT OF STATISTICS AND OPERATIONS RESEARCH
ALIGARH MUSLIM UNIVERSITY, ALIGARH

Minutes

A special meeting of the Board of Studies of the Department of Statistics & Operations Research held **ONLINE** on 24.11.2020 at 12.00 noon.

The following members were present:

S.No.	Name		
1	Prof. Athar Ali Khan		(in the chair)
2	Prof. Nizamuddin Khan, D/o Geography	(online)	(Assigned Member)
3	Prof. Aquil Ahmed	(online)	
4	Dr. Rafiqullah Khan		
5	Dr. Bushra Husain	(online)	
6	Dr. Haseeb Athar		
7	Dr. Shakeel Javaid		
8	Dr. Mohd. Jahangir Sabbir Khan		
9	Dr. Ahmad Yusuf Adhami		
10	Dr. Zaki Anwar		
11	Dr. Mohd. Faizan		
12	Dr. Irfan Ali		
13	Dr. Yasmin Khan	(online)	
14	Dr. Ahmadur Rahman		
15	Dr. Mohammad Azam Khan		
16	Dr. Fatima Siddiqui		
17	Dr. Sheema Sadia	(online)	
18	Dr. Romana Shehla	(online)	
19	Dr. Mohd. Khalid		

Then the following items on the agenda were considered and decisions taken:

Item No.1 : Considered and approved the list of Examiners, Moderators and Re-evaluators (Odd Semester) for the following examinations for the session 2020-21 to be sent to the Deputy Controller (Confidential Unit) through Dean, Faculty of Science under sealed cover. However, the Chairman, Department of Statistics & O.R. has been authorised to make necessary changes, if needed. Please see in Appendix A.

- B.A./B.Sc. I, III & V Semester
- M.A./M.Sc. (Statistics) I & III Semester
- M.A./M.Sc. (Operations Research) I & III Semester

Item No. 2: Considered and approved the introduction of M.Sc (Data Science).

At the end of the meeting, the Chairman thanked all members for the cooperation in holding the meeting.

(Prof. Athar Ali Khan)
Chairman
Dept. of Statistics & O.R.
A.M.U., Aligarh

Office of the Registrar
(Councils Section)
Aligarh Muslim University
Aligarh.

D. No. C.I.-A.C. (810)/ 3439

Jan. 2 , 2021

Members of the Academic Council

    An Ordinary Meeting of the Academic Council will be held on Monday, the 11ᵗʰ January, 2021 at 11:00 a.m. through Video Conferencing to discuss the enclosed Agenda. Only members of the Academic Council may join the meeting. It is not permissible for any member to depute any other person on his behalf.

    Meeting will be held through Webex. All are requested to join through the below mentioned Meeting Number, Password & Link:

    Meeting Number : 176 535 0116
    Password   : 11012021
    Meeting Link   : www.amu.webex.com

Kind Attention please:

1. All members are requested to join the meeting with their Name and Department.
2. Please ensure that speaker/mic should be turned off of your device. Unmute if you want to speak.
3. Please type your Name and Department in the Chat Box.

Enclosed: As above

Registrar

Jan., 2 , 2021

D. No. C.I.-A.C. (810)/ 3439
Copy to:-

    1.   The Secretary,
           Government of India,
           Ministry of Human Resource Development,
           (Department of Secondary & Higher Education)
           ShastriBhawan,
           New Delhi-110 001
    2.   The Secretary,
           University Grants Commission,
           Bahadur Shah Zafar Marg,
           New Delhi-110 002

Registrar

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Considered and approved the introduction of M.Sc (Data Science).

Introduction of a new P.G. Programme by the Department of Statistics & O.R. is also approved but to avoid duplicacy. it is decided that the programme is renamed as **M.Sc. (Data Analytics)**. The Dean is authorized to forward the M.Sc. (Data Analytics) course structure to the Academic Council after ratification and changes by the B.O.S. of Department of Statistics & O.R.

MATTER FOR CONSIDERATION

To consider the minutes of the Ordinary Meeting of the Faculty of Science held on 19.12.2020.

(Appendix- IV)

DEPARTMENT OF STATISTICS AND OPERATIONS RESEARCH
ALIGARH MUSLIM UNIVERSITY, ALIGARH

Minutes

An ordinary meeting of the Board of Studies of the Department of Statistics & Operations Research held **ONLINE** on 04.01.2021 at 12.00 noon.

The following members were present:

S.No.	Name	
1.	Prof. Athar Ali Khan	(in the chair)
2.	Prof. Nizamuddin Khan, D/o Geography (online)	(Assigned Member)
3.	Prof. Qazi Mazhar Ali	
4.	Prof. Aquil Ahmed	
5.	Prof. Rafiqullah Khan	
6.	Dr. Bushra Husain	
7.	Dr. Haseeb Athar	
8.	Dr. Shakeel Javaid (online)	
9.	Dr. Mohd. Jahangir Sabbir Khan	
10.	Dr. Ahmad Yusuf Adhami	
11.	Dr. Zaki Anwar	
12.	Dr. Mohd. Faizan	
13.	Dr. Irfan Ali	
14.	Dr. Yasmin Khan	
15.	Dr. Ahmadur Rahman	
16.	Dr. Mohammad Azam Khan	
17.	Dr. Fatima Siddiqui	
18.	Dr. Sheema Sadia	
19.	Dr. Mohd. Khalid	

The following items on the agenda were considered and decisions taken:

Item No.1: Confirmed the minutes of the previous meetings of the B.O.S. dated 07.07.2020, 26.10.2020 and 24.11.2020.

Item No. 2: Considered and approved the course structure and syllabus of M.Sc (Data Analytics). Please see in Appendix "A".

Item No. 3: Considered and recommended the names of co-opted members of Board of Studies of the Department.

01.	Prof. Aqil Ahmad Integral University Bas-ha Kursi Road, Dashouli, Lucknow	Email: tqm.luck@gmail.com Mobile No. 9415103310
02.	Prof Tauqeer Ahmad, ICAR-Indian Agriculture Stats Research Insitute Library Avenue, PUSA, New Delhi-110012	Email: tauqeer@iasri.in Mobile No. 91-9350916660

7-1-21

Chairman
Dept. of Statistics & O
A.M.U., Aligarh

Item No. 4:   Considered and approved the report of the final document of the Department to become part of "100 Years Achievements of the Faculty of Science" (Centenary) as given in Appendix "B" (sent to Dean, Faculty of Scinece.

Item No. 5: Considered and approved the request of Ms. Nancy Khandelwal to allot her a new supervisor from Dr. Mohd. Arshad to Dr. Haseeb Athar and Dr. Mohd. Arshad as co-supervisor as Dr. Mohd. Arshad has proceeded on E.O.L. for a periof of two years from 20.07.2020.

Inform to chairman

Item No. 6: Considered and recommended the panel of experts for the evaluation of Research Papers of Dr. Bushra Husain for promotion from Associate Professor to Professor (under CAS) in Women's College, Department of Statistics & O.R., as given in Appendix "C" (sent to Registrar, Confidential).

<u>**Any other item**</u>

1. Considered and approved the syllabus for M.A./M.Sc. Entrance Test in Statistics and M.A./M.Sc. Entrance Test in Operations Research 2021-22 of the Department of Statistics and Operations Research. Please see in Appendix "D".

At the end of the meeting, the Chairman thanked all members for the cooperation in holding the meeting.

(Prof. Athar Ali Khan)
Chairman
Dept. of Statistics & O.R.
A.M.U., Aligarh

Office of the Registrar
(Councils Section)
Aligarh Muslim University
Aligarh.

D. No. C.I.-A.C. (810)/ 3506   Jan.19 , 2021

Members of the Academic Council

    I am enclosing herewith a copy of the draft minutes of the Ordinary Meeting of the Academic Council held on **Jan. 11, 2021**, through Video Conferencing for information and comments, if any, within 15 days.

Encls: <u>As above</u>

(Abdul Hamid, IPS)
Registrar
Jan.19 , 2021

D. No. C.I.-A.C. (810)/ 3506

Copy to:-

    1.   The Secretary,
        Government of India,
        Ministry of Education,
        (Department of Secondary & Higher Education)
        Shastri Bhawan,
        <u>New Delhi-110 001</u>

    2.   The Secretary,
        University Grants Commission,
        Bahadur Shah Zafar Marg,
        <u>New Delhi-110 002</u>

Registrar

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Item No. 2 (BOS Dated 21.10.2020 Item No.3)
(Department of Computer Science)

Approved the proposal for starting new course as "M.Sc. in Cyber Security & Digital Forensics" in the Department of Computer Science from the session 2021-22 with the condition that Department will run the course with the existing teaching staff and recommended to the Admission Committee with the following intake:

25 General
05 NRIs } Total -30

Item No. 2 (BOS Dated 04.01.2021 Item No.2)
(Department of Statistics and Operations Research)

Approved the proposal for starting new course as "M.Sc. (Data Science)" in the Department of Statistics & O.R. from the session 2021-22 with the condition that Department will run the course with the existing teaching staff and recommended to the Admission Committee with the following intake:-

20 General
05 NRIs } Total -25

Item No.8 : TO CONSIDER THE PANEL OF EXPERTS ON THE SELECTION COMMITTEES FOR VARIOUS TEACHING POSTS AS RECOMMENDED BY THE BOARD OF STUDIES OF VARIOUS DEPARTMENTS AS REQUIRED UNDER STATUTE 27(1) OF THE STATUTES OF THE UNIVERSITY

The item No.8 Panel of experts merged with **Item No. 6.**

Item No.9 : TO CONSIDER THE MINUTES OF THE ORDINARY MEETING OF THE FACULTY OF ARTS HELD ON 06.10.2020

The house **considered** the minutes of the Ordinary meeting of the Faculty of Arts made at its meeting held on 06.10..2020:-

Item No. 2

Approved and recommended to **Admission Committee** the action taken by the Curriculum Development Committee (CDC) held on 05.10.2020 and syllabi/syllabus and revisions, modifications, implementations in the syllabi of undergraduate, postgraduate courses, Ph.D. course works and certificate courses.

Item No. 3 (2)

Approved the recommendations made under the following Board of Studies for various academic activities:

D: Minutes. Ord.meet.AC.810_Monday11.01.2021