



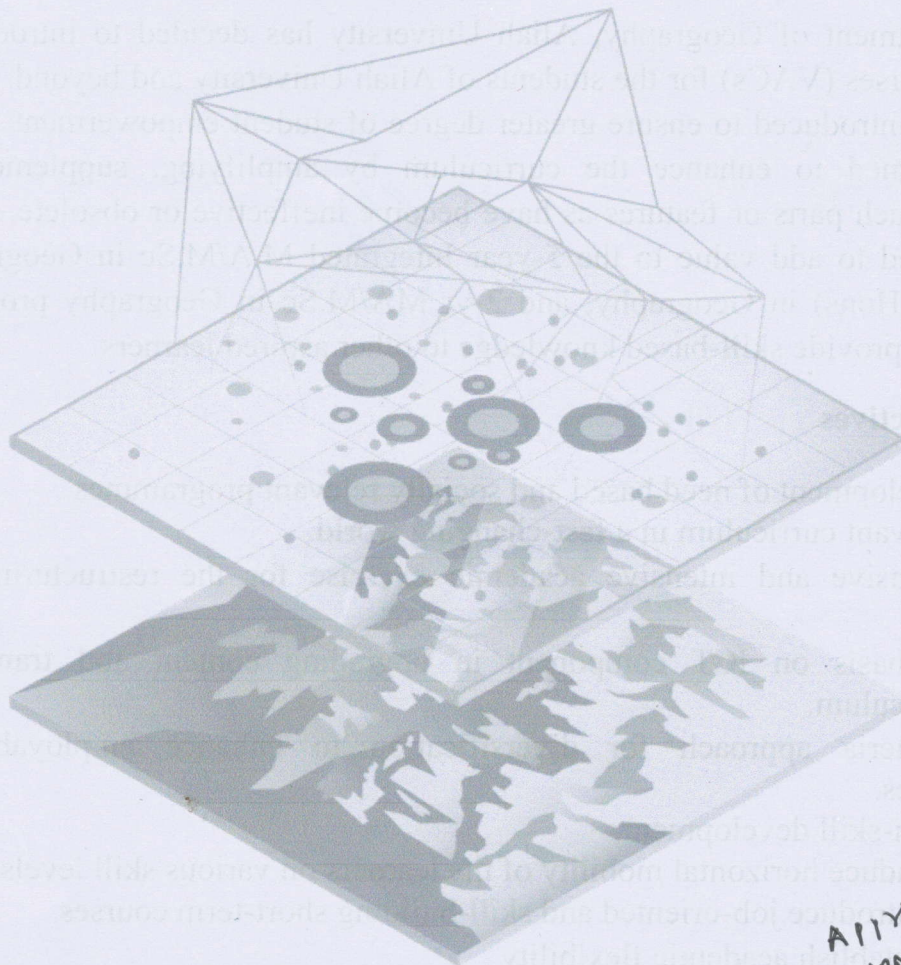
Aliah University

Department of Geography

Certificate Course

on

Geoinformatics and Python for Spatial Analysis

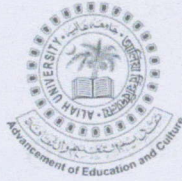


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Aliah University

Dept. of Geography Outcome of Value Added Course

On Geoinformatics and Python for Spatial Analysis

Backdrop

The Department of Geography, Aliah University has decided to introduce Value Added Courses (VACs) for the students of Aliah University and beyond. The VACs have been introduced to ensure greater degree of student empowerment. They have been designed to enhance the curriculum by amplifying, supplementing and replacing such parts or features as have become ineffective or obsolete. The VACs are expected to add value to the 5-year Integrated M.A/M.Sc in Geography, 3-yr B.A/B.Sc (Hons) in Geography, and 2-yr MA/M.Sc in Geography programme in addition to provide skill-based knowledge to other aspired learners.


Major objectives

- Development of need based and socially relevant programmes.
- Relevant curriculum in a fast-changing world.
- Extensive and intensive academic exercise for the restructuring of the courses.
- Emphasis on ICT component in upgrading content and transaction of curriculum.
- Cafeteria approach for diversification to enhance employability of graduates.
- Multi-skill development.
- To induce horizontal mobility of the learners on various skill levels
- To introduce job-oriented and skill-building short-term courses
- To establish academic flexibility

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Specific outcomes

- With the fast-changing platform across the world, grasping the basic knowledge of remote and GIS is the need of the hour to survive ourselves. Therefore, this certificate course aims to develop a state of art of remote sensing techniques, GIS and programming and their application in geo-spatial analysis.
- At the end of the course, students will be able to learn: (1) Basics of python programming (2) Python for geospatial analysis, (3) Geostatistics and spatial data processing, (4) Basic supervised machine learning algorithms and their coding.
- It will enhance students' employability in different Govt. sectors research laboratories, and corporate worlds especially after the digital move in India. To get absorbed in different position such as digital cartographer, spatial analyst, geo-environmental modeler, this course will also be helpful to spark their cognition.


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VALUE-ADDED COURSE
ON
GEOINFORMATICS AND PYTHON FOR SPATIAL ANALYSIS

Duration: 6 months

Credit: 4

Contact Hours: 40

UNIT 1: PYTHON BASICS I

- 1.1 Programming Methodology: Algorithm and Flowchart [2]
- 1.2 Introduction to Python: Installation of Python environment (Jupyter Notebook in ANACONDA); Variables and types, Operators and Operands, Statements, Input and Output, Modules and built-in functions; Conditional and Looping constructs (if-else, while and for loops with range method for simple and nested cases); Variable Scope; User defined functions. [4]
- 1.3 Strings: Traversing, slicing, operations, methods and built-in functions, regular expression and pattern matching [2]
- 1.4 Lists: Creating list, Accessing, traversing, adding, updating and deleting elements, list functions and methods, list as an argument, matrix implementation [2]

UNIT 2: PYTHON BASICS II

- 2.1 Dictionaries: Key-value pair, Creating, initializing, accessing, traversing elements, dynamic allocation, appending value, merging dictionaries, removing items, dictionary functions and methods. [1]
- Tuple: Creating tuple, appending element, assignment, slicing, tuple functions and methods [1]
- 2.2 Object Oriented Programming: Concept, Class and Object creation, Object attributes and class attributes, Methods [1]
- 2.3 Numpy: Importing csv file, handling arrays, implementing mathematical operations on arrays using numpy [3]
- 2.4 Pandas: Accessing data, manipulating data in dataframe [2]
- 2.5 Plotting of graphs using matplotlib [2]

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UNIT 3: BASIC SUPERVISED MACHINE LEARNING ALGORITHMS AND THEIR CODING I

- 3.1 Types of Machine Learning; Steps in supervised machine learning [1]
- 3.2 Bivariate and Multiple Linear Regression: Mathematical background; Score, Cost function, gradient descent and learning rate; Coding Linear regression using sklearn. [3]
- 3.3 Binary and Multi-class Logistic Regression: Cost function, gradient descent, classification measures and their coding in python. [3]
- 3.4 Decision Tree: Concept; Building Decision Tree for discrete and continuous data, accuracy assessment; Implementation in sklearn and pruning. [3]

UNIT 4: BASIC SUPERVISED MACHINE LEARNING ALGORITHMS AND THEIR CODING II

- 4.1 Random Forest: Concept and implementation in python [1]
- 4.2 K-Nearest Neighbour: KNN algorithm and its implementation in python. [2]
- 4.3 Support Vector Machine: SVM algorithm; SVM cost function and accuracy; Non-linear decision boundary and kernels; Multi-class classification; Implementation in python. [3]
- 4.4 Principal Component Analysis: Mathematical background; Application of PCA on 2D and 3D data; Coding for PCA; Application in Image classification [4]

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Department of Geography

Aliah University, Kolkata


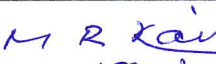


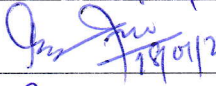


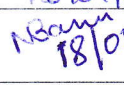
Board of Studies (BoS) Meeting

A meeting of Board of Studies (BoS) was held on 18.01.2021 at 3:00 pm in blended mode (i.e. the members especially the external members joined the meeting via virtual platform using GOOGLE MEET (<https://meet.google.com/vft-anxj-dpg>) and the internal members joined physically at the department of Geography) to resolve the following agenda.

Agenda

1. Finalizing the course content of the value added course (6-month certificate course) on 'Geoinformatics and Python for Spatial Analysis'
2. Misc.

Members Present

Sl. No.	Name	Designation	Role in BoS	Signature
1	Dr. Aznarul Islam	HoD (Officiating) & Assistant Professor, Dept. of Geography, AU	Chairman	 18.01.2021
2	Prof. (Dr.) Mir Rejaul Karim	Professor of Bengali and Dean, Humanities and Languages, AU	Member	 18/01/2021
3	Dr. A K M Anwaruzzaman	Associate Professor, Dept. of Geography, AU	Member	 18/01/21
4	Dr. Md. Julfikar Ali	Assistant Professor, Dept. of Geography, AU	Member	 18/01/21
5	Dr. Md. Mustaquim	Assistant Professor, Dept. of Geography, AU	Member	 18/01/21
6	Dr. Rukhsana	Assistant Professor, Dept. of Geography, AU	Member	 18/01/21
7	Dr. Moududa Khatun	Assistant Professor, Dept. of Geography, AU	Member	 18/01/21
8	Dr. Nasrin Banu	Assistant Professor, Dept. of Geography, AU	Member	 18/01/21
9	Dr. Arup Kumar Baksi	Associate Professor, Dept. of MBA, AU	Member	
10	Dr. Manas Dutta	Assistant Professor, Dept. of History, AU	Member	
11	Prof. (Dr.) Lakshmi Sivaramakrishnan	Professor, Department of Geography, Jadavpur University, Kolkata	Member	
12	Prof. (Dr.) Sumana Bandyopadhyay	Professor, Department of Geography, University of Calcutta, Kolkata	Member	
13	Prof. (Dr.) Soumendu Chatterjee	Professor, Department of Geography, Presidency University, Kolkata	Member	

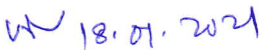
Agenda resolved:

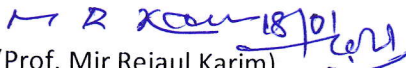
Agenda 1: The course content and title of the value added course (VAC) has been thoroughly discussed among the BoS members and the following points have been unanimously decided.


- d. The revised title of the VAC is '**Geostatistical Analysis using Python**'
- e. The course content is also revised and finalized.
- f. The Minimum eligibility criterion for joining the course is a Masters degree in any discipline.

2. Misc. :

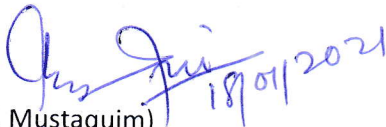
Under this head, one point was discussed regarding the post of Technical Assistant (Grade I) after Dr. Hasan Ali was released on lien (subject to the ratification of the Executive Council, AU) to join as Assistant Professor in a UG college. The BoS members have unanimously decided that as the dept. Of Geography is a laboratory based subject and heavily dependent on Technical Assistant, the university authority is requested to recruit a Technical Assistant in place of Dr. Ali as a lien-bound permanent vacancy on urgent basis following the rules and regulations of the appropriate authority.



(Dr. Aznarul Islam)
Chariman

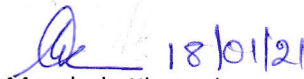

(Prof. Mir Rejaul Karim)
Member

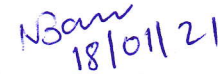

(Dr. A K M Anwaruzzaman)
Member


(Dr. Md. Julfikar Ali)
Member


(Dr. Md. Mustaqim)
Member


(Dr. Rukhsana)
Member


(Dr. Moududa Khatun)
Member


(Dr. Nasrin Banu)
Member

(Dr. Arup Kumar Baksi)
Member

(Dr. Manas Dutta)
Member

(Prof. Lakshmi Sivaramakrishnan)
Member

(Prof. Sumana Bandyopadhyay)
Member

(Prof. Soumendu Chatterjee)
Member

Proceedings of the 12th Meeting of the Majlisi-i-Talimi (Academic Council) of Aliah University held on 03rd February 2022 at 12:00 noon in the Seminar Room, 3rd Floor, New Town Campus, IIA/27, New Town, Kolkata 700160.

Professor Mahammad Ali, Hon'ble Vice-Chancellor, welcomed the members of the Academic Council and thereafter, the meeting started and the following resolutions were adopted:

1. To confirm the proceedings of the 11th meeting of the Academic Council held on 06/01/2022.

The proceedings of the 11th meeting were mailed to the members of the Academic Council for their kind perusal and valuable suggestions.

Resolved that the proceedings of the 11th meeting of the Council are accepted and confirmed. Resolved further that Prof. Debades Bandyopadhyay be invited to take classes in the Department of Physics on an honorary basis.

2. To discuss the prayer of some students regarding WBCS Coaching.

The Hon'ble Vice-Chancellor read out a letter received from the MA & ME Department vide no. 31-MD-11018/72/2017 dated 05/01/2022, regarding exploring the possibility of organizing the residential coaching programme for WBCS in the campus of the University. The Hon'ble Vice-Chancellor also informed the House that his office is in receipt of several prayers from the student for reopening the WBCS Coaching programme.

The matter of reopening the WBCS Coaching in line with the above-referred letter from MA & ME Department is discussed at length.

Resolved that in lieu of the Chingrighata Hostel, which has been released recently, a proposal for hiring a separate building in the vicinity of the New Town Campus for accommodating WBCS aspirants be sent to the MA & ME Department. Resolved also that classes will be held in the New Town Campus.

Resolved further that MA & ME Department be approached for release of financial grants for other related expenses like (i) remuneration for teachers (ii) remuneration of Centre-in-Charge/Advisor, Course Coordinator and Attendants (iii) mock tests (iv) food charges (v) newspaper periodical (vi) books (vii) photocopy, water, etc.

The House also proposed that preference should be given to existing students of the University. It is resolved that an intimation to this effect be forwarded to the MA & ME Department for necessary approval.

3. Miscellaneous.

- i. **To discuss the matter of engagement of Guest Teachers in various departments based on existing workload**

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Resolved that the academic departments shall submit their requirements for guest teachers, to the Office of the Hon'ble Vice-Chancellor, through respective Deans of Faculties.

ii. **To discuss the introduction of free coaching for NET/SET for various departments of Park Circus Campus and Taltala Campus**

The matter of introducing free coaching for NET/SET for various departments of Park Circus Campus and Taltala Campus was proposed by the Dean, Faculty of Humanities and Languages. The proposal for introducing free coaching for NET/SET/GATE for various departments is welcomed by the House.

In this context, the Hon'ble Vice-Chancellor read out a letter received from the MA & ME Department vide no. 52-MD-11018/1/2022 dated 10/01/2022 regarding introducing free coaching for NET/SET/GATE at Aliah University. The information sought by MA & ME Department in the said letter was discussed in the House. It is resolved that the University may start the coaching programme with existing furniture and computers available and a revised proposal (excluding the request for a financial grant for the development of infrastructure) be submitted to MA & ME Department for immediate approval.

iii. **To discuss the implementation of API calculation form approved by WB Higher Education**

Resolved that the WBHED's API calculation form is provisionally accepted and shall be followed by the University in case of direct recruitment of teachers.

Resolved further that the rules/guidelines for the promotion of teachers under CAS as proposed by the IQAC are provisionally approved. Necessary changes may be made in the said rules/guidelines if required.

Also resolved that CAS shall be implemented in line with the GO / Notifications in force at the material point of time.

iv. **To discuss the prayer of Sk Sahajan Ali, a student of Islamic Theology regarding the supplementary examination.**

Resolved that the prayer of Sk Sahajan Ali is disapproved by the House

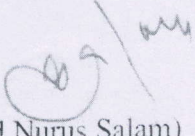
v. Resolved that bus(es) be hired from CSTC to facilitate the students to commute between the New Town Campus and Park Circus Campus

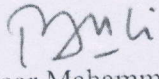
vi. Resolved that a proposal for introducing a Chair Professor in the Department of Mathematics and Statistics be forwarded to the MA & ME Department, Government of West Bengal for necessary approval.

vii. Resolved that the classes of the 1st semester students of all programmes (except Nursing) shall commence from 21/02/2022 i.e. after the examinations scheduled to be held between 10/02/2022 and 20/02/2022.

- viii. Regarding submission application for NAAC accreditation, it is resolved that the following proposed dates are approved
- a) Date of Registration with NAAC portal – 10/02/2022
 - b) Date of Initial application (IIQA) – 15/05/2022
 - c) Date of uploading SSR – 30/06/2022
- ✓ ix. Resolved that the list of experts for conducting Value Added Courses (VACs) classes in the Department of Geography as forwarded by the HOD, Geography on 27/01/2022 is approved.
- x. The matter of semester-wise distribution of common Arabic and Islamic Studies classes for PG students in different campuses was discussed. It is resolved that the Deans of Faculties, DSW, COE, and Head, Dept. of Arabic shall discuss whether the classes will be conducted in one semester or two semesters. The Deans of Faculties shall submit the decision to the office of the Hon'ble Vice-Chancellor for necessary further action.

As there were no more agenda items the meeting ended with a vote of thanks to and from the Chair.


(Dr Syed Nurus Salam)
Registrar
Secretary, Academic Council


(Professor Mahammad Ali)
Vice-Chancellor
Chairman, Academic Council