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To:

Professor Tariq Mansoor
Vice Chancellor
Aligarh Muslim University
Aligarh, Uttar Pradesh, India

March 26, 2021

Ref: S.N. Nahar Research fund for B.Sc. and M.Sc. students supervised by the Indo-US APJAK STEM Education and Research Center of OSU-AMU

Dear Vice Chancellor Prof. Tariq Monsoor,

Assalamu alaikum.

This is regarding the guidelines and funding of the STEM Research Program for projects for B.Sc. and M.Sc. students of AMU disciplines under the supervision of the Indo-US APJAK STEM Education and Research Center of OSU-AMU. In June 2018, we agreed on introducing the STEM Research Program at the STEM ER Center of OSU-AMU. The email exchange of my proposing the program and you approval are attached.

In 2018 email proposal I offered to provide \$3000 for sponsoring the program. However, due to unavailability of any bank account information, fund could not be transferred. I have found now the following account information in the papers being processed for purchase of computers for the Center by OSU and have verified it with the Finance Officer of AMU. I will send the fund through "Aligarh Education Endowment Fund (AEEF)" in California which sends fund to India for educational purposes. Dr. Shaheer Khan, Treasurer of AEEF is copied to this email.

Payee name: Finance officer AMU

Address: Aligarh Muslim University, Aligarh, U.P., India

Bank: State Bank of India

Name of the Branch and code: AMU Branch of SBI, 05555

Account number for AMU: 38430521716

Transit Routing number IFSC: SBIN0005555

SWIFT code: SBININBB221

Contact Person: Prof. Jawed Akhtar

Contact phone 91-5712703305, Contact email: fo.amu@amu.ac.in

March 26, 2021

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Your approval is required for the attached document that gives details of the guidelines and financial support for the projects under the STEM Research Program and use of Nahar's research fund.

Thank you for your support and approval.

With best regards,

A handwritten signature in black ink that reads "Sultana N. Nahar". The signature is written in a cursive style with a large initial 'S'.

Prof Sultana N. Nahar, APS Fellow, BPS Fellow
Astronomy, OSU

OSU Co-Director: Indo-US APJAK STEM Education and Research Center of
OSU-AMU

Guidelines and fund distribution policies for the STEM Research Program:

S.N. Nahar research fund for projects for B.Sc. and M.Sc. students of AMU to be administered by the Indo-US APJAK STEM Education and Research Center of Aligarh Muslim University and The Ohio State University

This document describes the objectives and guidelines for use of the S.N. Nahar research fund for the STEM Research Program at the STEM Education and Research Center. The Center may continue to follow the same guidelines for the program with funds from AMU and other sources.

1. Objective of the STEM Research Program:

To create opportunities for scientific research experiences and presentations at conferences, and possible publications in scientific journals, for the B.Sc. and M.Sc. students of Aligarh Muslim University (AMU) under the supervision of the Indo-US APJ Abdul Kalam STEM Education and Research (ER) of the Ohio State University (OSU) and AMU. Research experience is one main criteria for admission for a higher degree, such as Ph.D., in US universities.

Although capable of carrying out research, even bringing new ideas, the B.Sc. and M.Sc. students do not have the opportunity to do so under current curriculum of central universities, such as AMU, in India. Some research scopes exist for M.Sc. students but not necessarily required.

Under the STEM Research Program, each research project will have 3 basic components: i) 6 months long project, ii) writing a thesis, iii) presentation in a symposium organized by the Center which will end in felicitation of the students and research advisors. The research advisor will be encouraged to publish the work with the student as a co-author.

The program also encourages Muslim females, who represent the lowest fraction in STEM in India, to choose and remain in STEM fields. With these objectives, at the event of International Women's Day on March 20, 2021 which was held jointly by the STEM ER Center and International Society of Muslim in Science (ISMWS), the AMU chapter of ISMWS at the STEM ER Center was founded with an executive committee of 4 students and Center members as the Advisors. Formation of the AMU chapter at the Center was approved by the committee in late 2020. Female students have already began enrolling to the Society. This Research Program will support and supervise the STEM activities and professional networking of ISMWS members at AMU.

2. Proposal and Approval for the STEM Research Program at the STEM ER Center, 2018

On June 9, 2018, Prof. Sultana N. Nahar, the OSU Co-Director of the Indo-US APJAK STEM ER Center of OSU-AMU, proposed to Vice Chancellor Professor Tariq Mansoor of AMU of introducing a STEM research program (the correspondence email is attached at the end of this document) at the STEM ER Center that would administer STEM research projects for B.Sc. and M.Sc. students, and offered to provide \$3000 to sponsor the program.

The VC Prof. Mansoor responded positively on June 12, 2018 expressing full support for the proposal (the response email is attached at the end) and communicated the proposal to all concerned.

The Research Program was then announced in a seminar event held at the STEM ER Center in September 2018. It brought high enthusiasm among many students who came to Center to enroll for the program.

3. Funding for the STEM Research Program:

Sultana N. Nahar research fund of \$3000 for the STEM Research Program offered in the 2018 proposal could not be transferred to the Center since the bank account information for it was not available. The bank account became available in 2021 during the billing process of the computers for the Center to be purchased by OSU. Prof. S.N. Nahar will send \$3000 soon to this account. This document details the the guidelines of the research projects and how the fund will be distributed with the approval of the VC of AMU.

2018: Although there was no funding available, finding high demand for enrollment for the research program by the students, AMU Center Director Professor Tauheed Ahmad and Co-Director Professor Farukh Arjmand, proposed in September 2018 to the OSU-AMU Center committee to initiate the STEM Research program without the funding and evaluate the outcome. The Center committee readily approved the proposal. Approval from the VC was acquired. From a large pool of applicants, 26 students were selected to carry out research projects. All completed projects successfully.

2018-2019: STEM faculty members of AMU came forward to volunteer the first initiative by advising the selected students and bearing the research expenses for 6 months. The expenses for the symposium presentations and felicitation in September, 2019, as well as March 2020 symposium at the Center, when students also participated, were covered by the contingency fund of the Center allocated by VC Prof. Tariq Mansoor of AMU.

2020: In 2020, the Vice Chancellor Prof. Mansoor approved allocation of 3 lakh INR for the STEM Research Program after Prof. Tauheed Ahmad and Prof. Farukh Arjmand provided the details of the progress of the program and need for the funding. This fund along with \$3000 will help continuation of the research program for the B.Sc. and M.Sc. students for some years.

Funds for projects: Since the funding amount for a project will vary depending on the research type, all students participating the program will submit to the Center the estimated budgets with justification of cost, as suggested by their advisors. This should be done even for projects which may not have any cost, and the student will explain why no cost is expected. The Center will add up all cost, including cost the Center will bear, and ask the university to pay the total amount to the Center and the Center will distribute the payments to the advisors of the individual projects. The Center will consider the fact that the cost may exceed or go below the estimated cost at the end of the program, and act accordingly for adjustments with the university office. Details of expenditures are described below.

4. Expected expenses for the research projects:

i) Research costs:

Research costs are expected to be provided by the Center fund: The expenses for the research projects will vary depending on the type of research, theoretical and experimental.

There are projects, such as Citizen Science projects, available on-line created by various scientific organizations, such as, NASA, and universities, such as, OSU, for anyone to participate from any part of the world. These require either no supplies cost or low cost.

According to Center Director Prof. Tauheed Ahmad, most theoretical projects that B.Sc. and M.Sc. students can perform may not require any or small fund for supplies. However, if a simulation package is needed for the research, the university may like to purchase so that it can be accessible by a wider community of AMU.

For experimental research projects, laboratories require fund to buy samples and relevant supplies. According to Prof. Rizwan, who runs a high level experimental lab at Biotechnology Department, a B.Sc./M.Sc. student doing experiments for 6 months can cost about 20,000 INR.

ii) Result analysis tools cost:

Analysis of results may require tools like MATLAB, Mathematica, etc. These are expensive for the Center unless AMU has the license for them. AMU may like to purchase them since they can be used for students from various STEM disciplines.

iii) Cost for thesis and presentations:

Each student is expected to write a thesis on his/her research project. Writing the thesis on the research project may not cost any. However, it is suggested to have two printed copies of the thesis in hard binding form, one for the student and one for the Center. The Center is expected to bear the printing cost of both copies.

Oral presentations may not cost any. However, poster presentations will cost for the printing. The Center is expected to bear the expenses.

iii) Cost for felicitations:

Each student will receive a certificate printed on hard glossy/waxed paper which will require printing cost that the Center can bear.

It is suggested the Center gives each advisor a certificate for the volunteer service of research guidance of one or more students. Center will fund them. Center may decide to give generic trophies or mementos to 1-3 advisors based on students experiences of the research under them.

Event refreshment cost may come from the contingency fund.

iv) Conference travel cost:

If a student who did his/her research under the Center program and is accepted for presentation in a conference outside AMU, may receive partial or total travel fund for the conference.

v) Cost for "STEM-Tea" for interaction and networking:

It is suggested to have a weekly "STEM-Tea" hour at the Center where both the advisors, students can meet, socialize, and discuss their projects. This is a helpful way to form a network of getting information on research, various opportunities for scholarship, higher study, and support for each other. The tea essentials should be provided by the Center for students to prepare the tea themselves.

vi) Miscellaneous cost:

There can be other research related cost for which the Center can evaluate and bear the cost.

5. Guidelines for the program and receiving funds for research projects:

The guidelines for the projects will follow partly to those followed for the highly successful first batch of B.Sc. and M.Sc. students during 2018-2019. All selected students completed projects, wrote thesis, and made presentations. Prof. Tauheed's trainee a B.Sc. student even went for presentation in a national conference. However the Center did not need to handle the funding issues.

- The Center is suggested to have a roster of volunteer faculty members who will be willing to train and guide the students for the research projects. This roster may include alumni of AMU and other established scientists from any other institutions, national and international, willing to participate. This roster is in addition to other faculty members in various STEM Departments who can decide to participate seeing the program notification from the STEM ER Center.

- Every year, the Center will call for applications from B.Sc. and M.Sc. students for 6 months long research projects to be submitted to the Center within an application deadline. The notice circular may be posted at the Center website, outside the Center entrance, and sending it to various STEM departments, including the medical school.
- The Center will sort the applications and call students for presentations about themselves and research objectives. It will select students, from 25 to 50 depending on the resources available. It will send the list of selected students with their information to the volunteered research advisors as well as to the faculty members in STEM Departments at AMU through their Chairs who may choose one or more students with matching objectivity.
- The program will start officially by an orientation at the Center for the selected students and their advisors where a Center member will present criteria of project completeness, funding policies as described below, and educational conducts, and other scopes. This document may be used as the guidelines for the orientation.
- Each student will submit, in discussion with the research advisor, i) a proposal describing the concept of the research project (1 to more pages) and ii) budget for the project giving an estimated expense with justifications within a month of the start of the project.

The proposal will have the project title, names of the student and advisor/advisors, Department information, and description of the project. It will also be accepted if the proposed research turns in to a different one due to change of interest or deadline for completion within time.

Along with the proposal, the budget with some justifications only for the research should be given in a separate page. Budget page should be attached even if there is not research cost, such as, for Citizen Science projects. It will be assumed that the actual cost may exceed or go below the estimated cost. The allocated fund will be adjusted accordingly. While the student will make the request to the Center for the project fund, the fund will be transferred to the advisor.

- The Center will also support if the ISMWS student members plan some STEM activities and professional networking event.

One or two members of the Center will keep all the receipts of all activities and collect the fund from the Finance Officer of AMU. For immediate need, the Center may use its Contingency fund and pay it back from the Research fund.

- The student will complete the research project by writing a thesis on the research and submit both the soft-copy and a hard copy to the Center. He/she will prepare a scientifically professional presentation, oral or poster, for the symposium organized by the Center. Dean of Faculty of Science, University officials,

Chairs, and students will be invited to the event. The certificates for the students should be signed by the Advisors, one of Center Directors, and Dean of Faculty of Science, and for the advisors by the VC and one of Center Directors. The event news should be published in the AMU news.

A handwritten signature in black ink that reads "Sultana N. Nahar". The signature is written in a cursive style with a large initial 'S'.

Prof Sultana N. Nahar, APS Fellow, BPS Fellow
Department of Astronomy, The Ohio State University, Columbus, OH 43210, USA
Co-Director: Indo-US APJAK STEM Education and Research Center of AMU-
OSU
Adjunct Professor, Aligarh Muslim University, India
Adjunct Professor, Cairo University, Egypt

Please note:

Next 3 pages contain emails on the proposal of the research program by Sultana N. Nahar and support by VC Prof. Tariq Mansoor in June 2018

Date: Sat, 9 Jun 2018 15:21:09 -0400
From: Sultana Nahar <nahar.1@osu.edu>
To: AMU PVC <pvcamu@amu.ac.in>, AMU VC Prof Tariq Mansoor <vcamu@amu.ac.in>,
Ashley Behrendt OSU <behrendt.16@osu.edu>,
Dr Absar Ahmad AMU <aahmad786in@gmail.com>,
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Malik Azeem AMU <malikazeemanwar@gmail.com>,
Omar Peerzada AMU <omarpeerzada@gmail.com>,
Priya Kurle Vasant <vasantkurle.1@osu.edu>,
Registrar AMU <registrar.amu@amu.ac.in>,
swaleha naseem AMU <nswaleha@gmail.com>
Subject: Initiate Research Project at APJAK STEMER Center

Dear VC Professor Tariq Mansoor,

Assalamu alaikum.

Research in STEM for both the postgraduate Masters level and undergraduate is intergral part of the applications to US universities for higher education. We emphasized it in the workshops of our "Women

in STEM Roadshow" project of US Department of State. However, this scope is not available to students, except Master students writing a research review project, in Indian universities.

I would like to initiate Undergraduate and Master Postgraduate Research project at the APJAK STEM Center for Education and Research. It will involve:

1. A web announcement to inform everyone in STEM at AMU of the project
2. Call for faculty members to volunteer in guiding the research projects
3. Call for students to apply for research project
4. Both the students and faculty members may propose "Citizen Science projects" available on the web that require less resources and less faculty time
5. Funding to purchase materials for research.

I offer to provide \$3000 to the STEMER Center to fund the projects. We already have the planned space for it in the center, the assigned research room across the Director's office and use part of the next room assigned for visitors and the staff member.

I would request your approval to initiate the project. Then I will send the fund to the STEMER Center account.

Best regards,
- Sultana N. Nahar

Prof. Sultana N. Nahar, APS Fellow
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Website: <http://www.astronomy.ohio-state.edu/~nahar>
Co-Director: APJ Abdul Kalam Center for STEM Education & Research of OSU-AMU
Director: Women in STEM Roadshow, 2017 - 2018
Adjunct Professor of Physics, Aligarh Muslim University, Aligarh, India
Founder: NORAD-Atomic-Data at <http://norad.astronomy.ohio-state.edu>
Textbook: Atomic Astrophysics and Spectroscopy (Cambridge U press 2011)
ISMWS: Founder & President

Date: Tue, 12 Jun 2018 06:36:33 +0000
From: "Vice-Chancellor, AMU Aligarh" <vcamu@amu.ac.in>
To: Prof. Sultana Nahar <nahar.1@osu.edu>
Cc: "Pro Vice-Chancellor, A.M.U." <pvcamu@amu.ac.in>,
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Alim Husain Naqvi AMU <aligarhnano@gmail.com>,
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Omar Peerzada <omarpeerzada@gmail.com>,
Priya Kurle Vasant <vasantkurle.1@osu.edu>,
Registrar <registrar.amu@amu.ac.in>,
swaleha naseem AMU <nswaleha@gmail.com>
Subject: Re: Initiate Research Project at APJAK STEMER Center

Dear Prof. Sultana Nahar,

1. Greetings from Aligarh Muslim University.
2. We will positively consider your Project.
3. I have sent your mail to all concerned (Coordinator, Co-Coordinators, STEM Centre).
4. I assure my full support for STEM Centre which I want to strengthen and which will surely grow in the days to come.

With best regards,
Prof. Tariq Mansoor
Vice-Chancellor