NCeAC

2020-21

ANNUAL REPORT

National Computing Education Accreditation Council

Established by
Higher Education Commission
Pakistan

NCEAC

NATIONAL COMPUTING EDUCATION ACCREDITATION COUNCIL

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Complied By

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Vice Chairperson, NCEAC
Hafiza Sumaira Hafeez
Program Coordinator

Contents

GENERAL INTRODUCTION

A. Chairperson's Message

It is my pleasure to present the annual report of NCEAC for the year 2020-21. I am thankful to the former Chairman Prof. Dr. Aftab Ahmad and Prof. Dr. Ayub Alvi for their dedicated efforts to improve NCEAC as an national accrediting body. I am also thankful to all current and former members of NCEAC for their contributions and support in helping NCEAC to improve the quality of computing education imparted by institutions of higher learning in the country. I also acknowledge the able guidance provided by the Quality Assurance Division (HEC), cooperation of the accredited universities, and the commitment of NCEAC secretariat staff.

I hope that universities offering computing programs will continue to improve their standards with the assistance of NCEAC. Currently, Pakistan produces around 20,000 computing graduates, but less than 50% of them are termed as quality graduates by Pakistan Software Houses Association (P@SHA). As chairman of NCEAC, my primary challenge is to improve the quality of undergraduate computing education in the country so that graduates of these programs are contributing members of national and multination software industry from day one. I plan to achieve this goal by working closely with the members of NCEAC, academic institutions offering computing programs, software industry, and relevant government and non-government bodies.

Prof. Dr. Syed Mansoor Sarwar
Chairman, NCEAC

B. About Chairperson

Prof. Dr. Syed Mansoor Sarwar was appointed the third Chairperson of NCEAC on July 6, 2020 for a period of four years by Chairman HEC. He is currently Vice Chancellor of University of Engineering and Technology (UET), Lahore. Prof. Dr. Sarwar is also a founding member of NCEAC, which was established in 2005. He has previously served the council as a member for 12 years (2005-2017). He has also served NCEAC as Vice Chairperson and Acting Chairperson. Prof. Dr. Sarwar has recently been selected as Chairman of UNESCO International Institute of Online Education (IIOE) for the year 2021.

Prof. Dr. Sarwar received his undergraduate degree in Electrical engineering, and MS and PhD degrees in Computer Engineering from Iowa State University, USA. He has an illustrious post-PhD academic career spanning 32 years, serving several academic institutions including University of Portland (Oregon, USA), Kuwait University, UET Lahore, LUMS, University of Management and Technology (UMT) Lahore, and University of Punjab. He is known in the academic circles for rebuilding academic institutions for enhanced quality. Prof. Dr. Sarwar has served on many HEC committees over the past two decades. He has also been a member of Punjab Information Technology Board (PITB) for several years.

Prof. Dr. Sarwar is the first author of six textbooks published by Addison-Wesley (Boston, Massachusetts, USA) and CRC Press/Taylor & Francis (Boca Raton, Florida, USA): UNIX: The Textbook (copyright 2001), LINUX: The Textbook (copyright 2002), LINUX AND UNIX PROGRAMMING TOOLS: A PRIMER FOR SOFTWARE DEVELOPERS (copyright 2003), UNIX: The Textbook, 2nd Edition (copyright 2005), UNIX: The Textbook, 3rd Edition (October 2016), and Linux: The Textbook, 2nd Edition (September 2018). The first editions of all three books have been translated into the Chinese and Spanish languages. His books are being used as textbooks in over 200 colleges and universities in the USA and in several other institutions of higher education in Canada, UK, Spain, Australia, Mexico, Hong Kong, and China. Over 50,000 copies of his books have been sold throughout the world. The US Navy in is using UNIX: The Textbook, Third Edition for one of its training programs. In Book authority's ranking of UNIX and Linux books, UNIX: The Textbook, 3e has ranked **1st** on the **73 Best Unix eBooks of All Time** and **2nd** on the **100 Best Unix Books of All Time** list. This book has also ranked **9th** on the **100 Best Operating Systems eBooks of All Time** and **12th** on the **100 Best Operating Systems Books of All Time.**

C.   History of Former Chairperson's

Prof. Dr. Aftab Ahmad
Founding Chairperson NCEAC
May 25, 2005 to Oct 13, 2015

Prof. Dr. Syed Mansoor Sarwar
Interim period Chairperson NCEAC
Nov 17, 2015 to Feb 16, 2016

Prof. Dr. Muhammad Ayub Alvi
Chairperson NCEAC
March 17, 2016 to March 16, 2020

D.   Governing Council

Following are the current members of the Governing Council of NCEAC. The members are appointed by HEC for a period of four years. On July 6, 2020 HEC notified the Chairman of the council & on 27th July, 2021, HEC notified the current membership of the Council.

	Name of Member	Designation & Department
1.	Dr. Syed Mansoor Sarwar (Chairman)	VC, UET, Lahore
2.	Dr. Jamil Ahmad (Vice Chairman)	VC, Hazara University, KPK
3.	Dr. Faisal Ahmad Khan Kakar	Pro VC, BUITEMS, Quetta
4.	Dr. Muhammad Ali Maud	Professor, UET, Lahore
5.	Dr. Nayyer Masood	HOD, CS, CUST, Islamabad
6.	Dr. Salman Iqbal	CEO, Softech Systems Pvt Ltd, Lahore
7.	Dr. Shafay Shamail	Associate Professor, LUMS, Lahore
8.	Dr. Shoab A Khan	Chancellor, Sir Syed, CASE, Islamabad
9.	Dr. Zartash Afzal Uzmi	Director, Confiz Pvt Ltd, Lahore
10.	Dr. Zubair A Shaikh	President, MAJU, Karachi
11.	Director	QAA, HEC
12.	Managing Director	Pakistan Software Export Board
13.	President	Pakistan Software Houses Association
14.	Chairman	Punjab Information Technology Board
15.	Secretary	Ministry of Science & Technology
16.	Director	Directorate of Information Technology, KPK
17.	Secretary	Information & Technology Dept., Baluchistan
18.	Secretary	Information Science & Technology Dept., Sindh
19.	Secretary	Ministry of Information Technology & Telecom
20.	Secretary	Secretary Education, Gilgit-Baltistan

E. Members General Council Committee

Dr. Syed Mansoor Sarwar
Chairman NCEAC
(July 6, 2020-)
Vice Chancellor
UET, Lahore

Dr. Jamil Ahmad
Vice Chairperson NCEAC
(July 27, 2021-)
Vice Chancellor
Hazara University
Mansehra

Dr. Faisal Ahmad Khan Kakar
Member NCEAC
(July 27, 2021-)
Pro Vice Chancellor
BUITEMS, Quetta

Dr. Muhammad Ali Maud
Member NCEAC
(July 27, 2021-)
Professor, UET, Lahore

Dr. Nayyer Masood
Member NCEAC
(July 27, 2021-)
HOD CS, CUST, Islamabad

Dr. Salman Iqbal
Member NCEAC
(July 27, 2021-)
CEO, Softech Systems
Pvt Ltd, Lahore

Dr. Shafay Shamail
Member NCEAC
(July 27, 2021-)
Associate Professor
LUMS, Lahore

Dr. Shoab A Khan
Member NCEAC
(July 27, 2021-)
Chancellor, Sir Syed,
CASE, Institute of
Information Technology,
Islamabad

Dr. Zartash Afzal Uzmi
Member NCEAC
(July 27, 2021-)
Director, Confiz Ltd,Lahore

Dr. Zubair Ahmad Shaikh
Member NCEAC
(July 27, 2021-)
President, MAJU, Karachi

F.   Secretariat

Muhammad Jawad Hussain
Program Manger

Hafiza Sumaira Hafeez
Program Coordinator

Mehran Munir Ahmad
Assistant Accounts

Arslan butt
Software Engineer

Syed Usama Ali
Assistant Software Engineer

Adeel Aftab
Assistant Software
Engineer

Muhammad Tanveer
Photocopy Machine Operator

G.   Introduction & Executive Summary

The Higher Education Commission of Pakistan based on the recommendation of the National Curriculum Revision Committee of Computer Science established National Computing Education Accreditation Council (NCEAC) in 2004 to formulate policies and procedures for the accreditation of the computing programs in the country.

National Computing Education Accreditation Council (NCEAC) was established by HEC in 2005. This Council started off by forming a committee to develop a framework and standard operating procedures (SOPs) for Accreditation of Computing Education. Dr. Aftab Ahmed, Founding Chairman, NCEAC, Dr. Moeed Mufti, Founding Member NCEAC, Prof. Dr. Syed Mansoor Sarwar, current Chairman, NCEAC prepared the initial criteria and set of forms for accreditation. First program (BSSE, UET, Taxila) was visited on November 18, 2006 by Prof. Dr. Syed Mansoor Sarwar

and Dr. Haroon Attique Babri. Prof. Dr. Syed Mansoor Sarwar was chair of Accreditation Inspection Committee that reviewed first four programs at UET Taxila, PIEAS, NUST, and COMSATS Islamabad. The Council evaluated first program in 2006. It also started an awareness campaign for the universities, so that they could prepare themselves for accreditation. Moreover, training programs were also started for its Program evaluators.

NCEAC is one of the fastest growing accreditation councils which has accredited more than 500 Programs nationwide so far. The Council established a well taught out set of procedures to accredit computing related programs such as BS Computer Sciences, BS Software Engineering, BS Information System, and others mentioned in this report. The Council started its operation with meagre resources in 2004. With the support of HEC and academic institutes, the Council emerged as a major player of accreditation in the country. Though it was not compulsory for the institutes to accredit their computing related degrees but with the efforts of the dynamic team at the council and accreditation committee members, the total number of accredited programs has passed 500.

In this age of information and knowledge, it is imperative to ensure quality and purpose of our educational programs. Computing profession, undoubtedly plays a pivotal role in the development of a nation. Accreditation protects and promotes the interest of all stakeholders, namely parents, students, faculty, academic administrators, employers, and taxpayers. To improve quality of computing education in Pakistan requires regular review, guidance, and quality improvement mechanisms. Accreditation process is considered an effective instrument to achieve these goals.

The main objective of accreditation process to recognize degree program offered any university. During the accreditation process, the Council makes it sure that degree program offered by any institute is supported by the prescribed facilities including certain number of teaching faculty, official and approved curriculum, labs and capacity of the university to run computing related degree programs. The award of accreditation helps prospective students to gain confidence about the quality of education they can expect to receive at a particular university. The accreditation also help to certify that following processes are of standard quality at the accredited institute:

- ❖ Assuring Quality of the graduate.
- ❖ Confidence of the job market to hire graduate of an accredited program.
- ❖ Acceptability of students by other universities especially in case of transfer of admission.
- ❖ Recognition of Qualifications.

Scope of the NCEAC
The following undergraduate programs in Computing fall under the purview of NCEAC:

1. BS Computer Science
2. BS Information Technology
3. BS Software Engineering
4. BS Artificial Intelligence

5. BS Data Science
6. BS Cyber Security
7. BS Information Systems
8. BS Bio-informatics

During the year under review (2020-21), NCEAC organized two webinar trainings for faculty development. These Webinars were online and scheduled on Zoom in HEC Islamabad on March 30, 2020 & July 14, 2021. The Initiative was aimed to train the computing faculty to improve the quality of computing education and the capacity building of computing faculty.

The NCEAC's General Council and the Accreditation Standard Committee meets four times in a year. Two meetings were held in HEC Islamabad during the FY 2020-21. These meetings were presided by the Chairman NCEAC. A Curriculum Review Committee Meeting was held on March 4, 2021 to review the undergrad Education policy and the curriculum of Associate degree Program. Also for the revision of Curriculum of Computer Science, Software Engineering, Information Technology, Data Science, Cyber Security, Artificial Intelligence & Bioinformatics.

In February 13, 2019 NCEAC has launched its online Accreditation Automation System and shifted from accepting paper-based application to online application. System requires information of focal person, departments, programs, faculties, courses, students, infrastructure, financial, general and library from HEIs & affiliated Institutes. In August 2020 NCEAC also developed an online Application for Program Evaluators to assist in evaluation process and on September 2020 we developed executive panels for General Council Members and AIC Members regarding NCEAC standards and criteria's.

Over the past year or so, NCEAC developed an Online Registration System for computing graduates. NCEAC is the first HEC council to start registering and issuing registration cards to computing graduates (cards issued to 154 graduates). The purpose of that system is to have a platform where all Computing Graduates can register as Computing Graduates and are able to be known as Registered Computing Graduate.

NCEAC is working in close collaboration with universities of Pakistan to develop awareness about the benefits of accreditation.

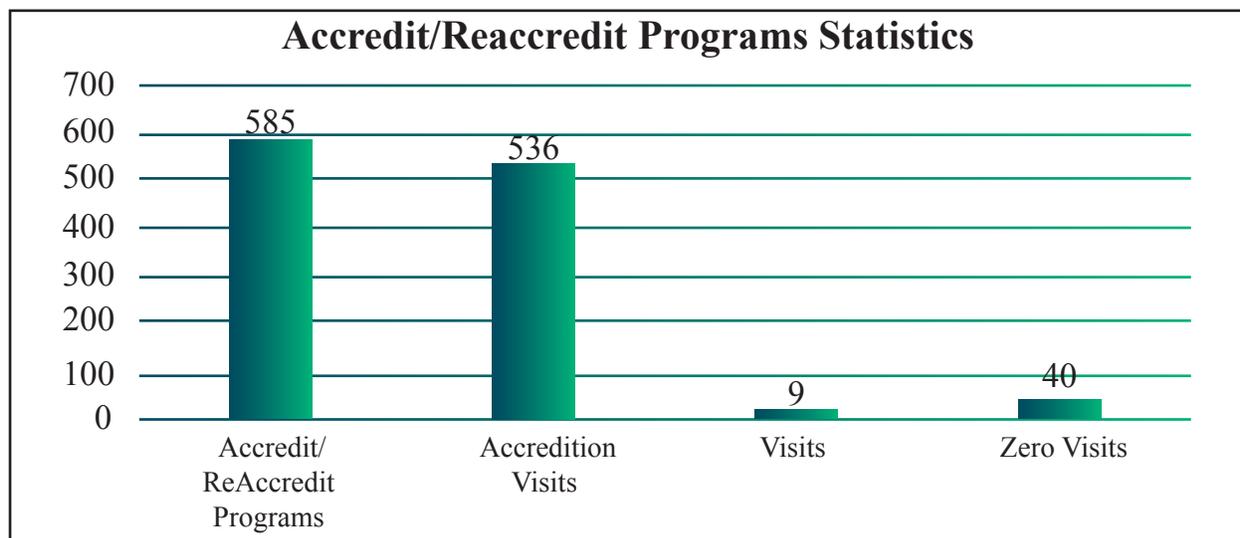## H.   NCEAC-At a Glance

i. Curriculum Development

Since its inception, the NCEAC developed and published various documents on the Computing curriculum development. Currently, two sets of documents are available which contain existing computing curricula for the programs shown below. Various committees and interest groups are used to develop curriculum. Industrial partners are also involved in this process.

❖ Computer Science – 2017
❖ Software Engineering – 2017
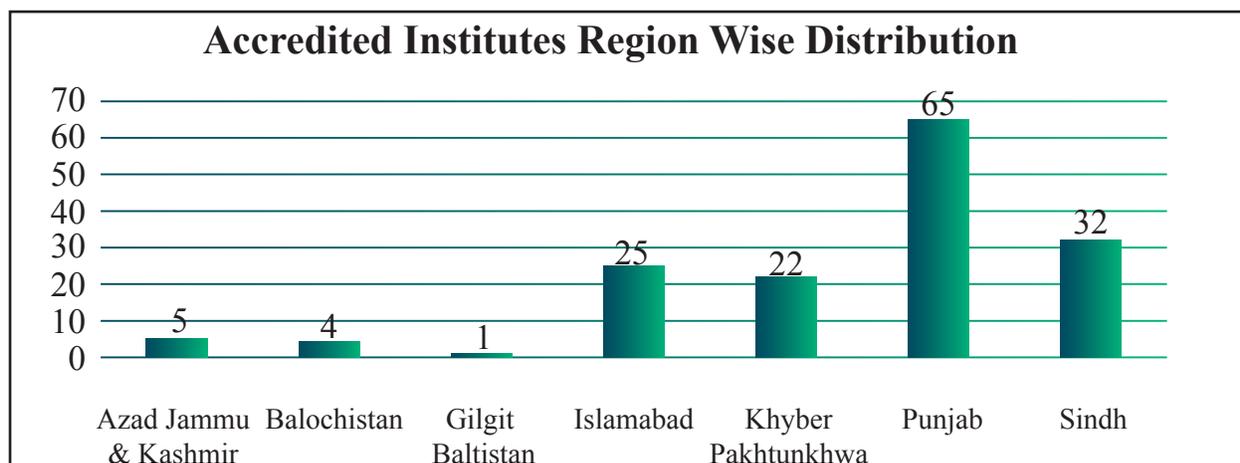❖ Information Technology – 2017

- ❖ Artificial Intelligence – 2020
- ❖ Cyber Security – 2020
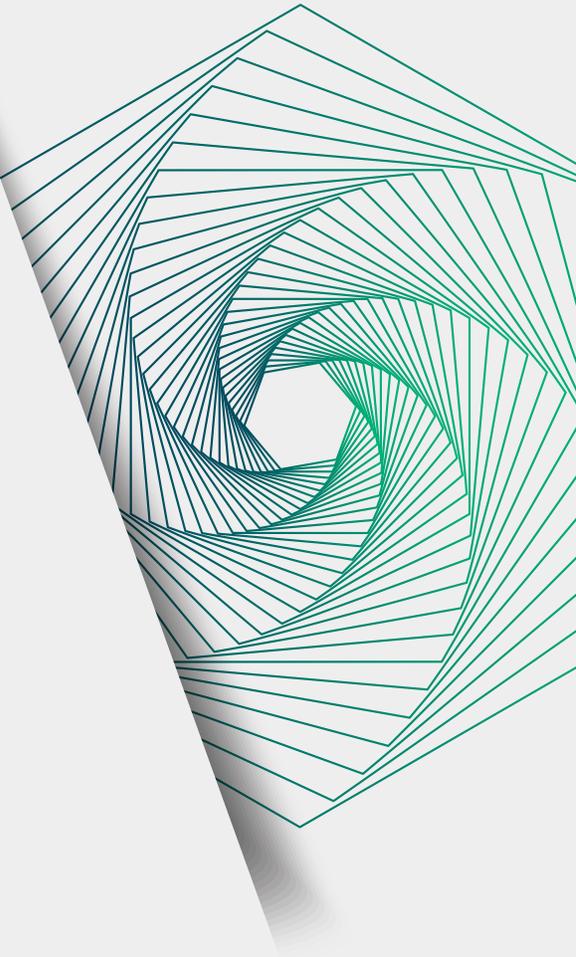- ❖ Data Science – 2020

ii. Accreditation

The Council has accredited/re-accredited 585 undergraduate Computing Degree Programs of 154 Institutes. Total 536 Accreditation visits conducted from 2008 to till date, in which 40 zero visits and 9 interim visits have been conducted. The front figure shows Accreditation visits data:

Accredit/Reaccredit Programs Statistics

Category	Value
Accredit/ReAccredit Programs	585
Accredition Visits	536
Visits	9
Zero Visits	40

The figure below shows that NCEAC Accredited/reaccredited 154 Institutions.
Region wise Accredited Institutes distribution is given below:

Accredited Institutes Region Wise Distribution

Region	Value
Azad Jammu & Kashmir	5
Balochistan	4
Gilgit Baltistan	1
Islamabad	25
Khyber Pakhtunkhwa	22
Punjab	65
Sindh	32

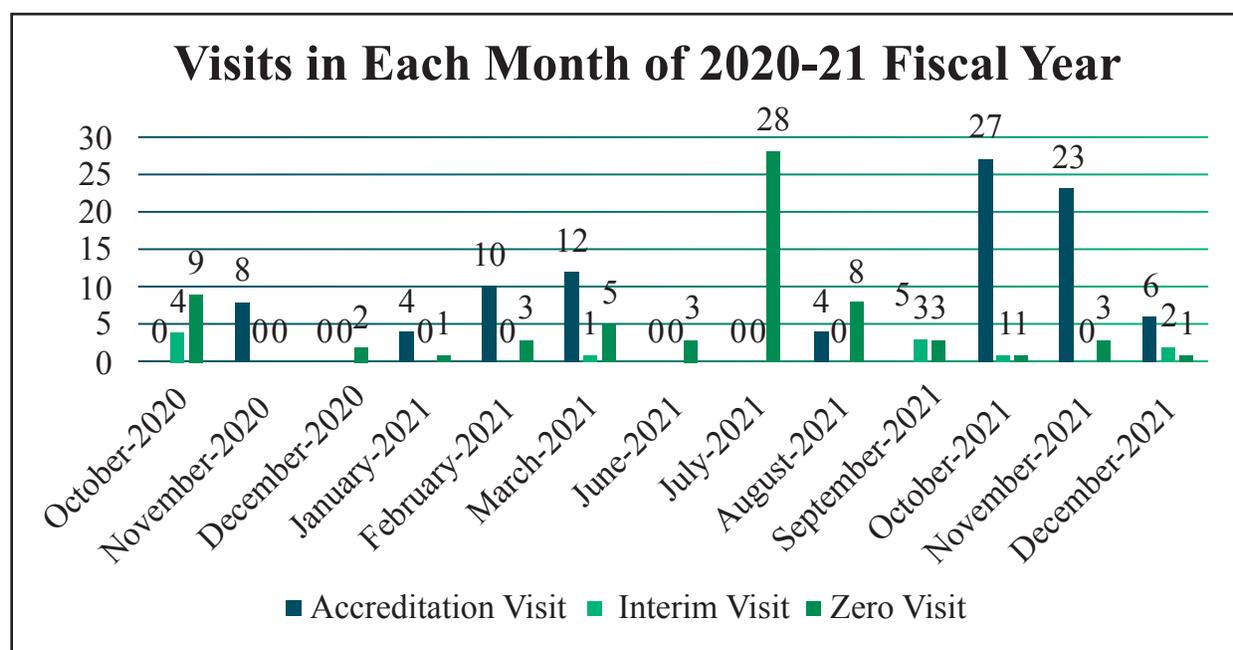# PERFORMANCE DURING THE REPORTING YEAR

A. Accreditation Inspection Visits

The Council arranges visits of different nature through the accreditation Inspection committees. These visits include Zero visits, Interim visits, Accreditation visits and re-accreditation visits. During the reporting year, 66 degree programs in 44 Universities were visited and evaluated for accreditation (some universities offer more than one computing program). Accreditation, Interim & Zero visits conducted during the reporting year is given below:

S. No	Month-Year	Accreditation Visit	Interim Visit	Zero Visit	Total
	Accreditation, Interim & Zoo Visits Conducted during the Reporting Year				
1.	Oct, 2020	-	4	9	13
2.	Nov, 2020	8	-	-	8
3.	Dec, 2020	1	-	5	6
4.	Jan, 2021	4	-	1	5
5.	Feb, 2021	10	-	3	13
6.	Mar, 2021	12	1	5	18
7.	Jun, 2021	-	-	3	3
	Total	**35**	**5**	**26**	**66**

Visits in Each Month of 2020-21 Fiscal Year

B. Addition of New Accredited Programs during the FY 2020-21

The below Table Shows a comparison that how many new Programs added during the reporting year. Total 240 Programs have been Accredited from 2007-2019 and 27 new programs accredited during the year 2020-21. Zero visits conducted for the newly applied programs and approved by the General Council. So till now NCEAC Accredited 267 Programs including 27 new programs of the Institutes.

S. No	Category	New Accredited Programs
1.	Programs before 2020-2021	558
2.	Addition of new Programs 2020-2021	27
Total Accredited Programs		**585**

A Comparison that how many new Programs Accredited during the FY 2020-2021
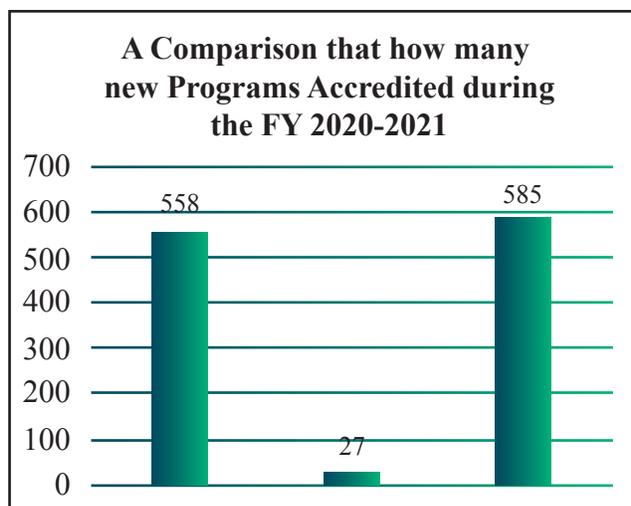
## C.   Accreditation Visits at a glance

As mentioned before that many visits have been taken place during the reporting period, highlights of some of these visits are given below. It is also important to mention that NCEAC arranged an online inspection visit for the first time. The visit was conducted from Islamabad through our senior most program evaluator. The outcome of the visit was encouraging.

1. Online Accreditation Inspection - University of Azad Jammu & Kashmir

The Accreditation Visit for BS Software Engineering (Fall 2015, Fall 2017, Fall 2018) of University of Azad Jammu & Kashmir, Muzaffarabad was successfully conducted on 02 November 2020 by NCEAC Secretariat.

The Accreditation Inspection Committee was formed with two members/evaluator, Prof. Dr. Jamil Ahmad, Vice Chancellor, Hazara University (Convener of AIC), Prof. Dr. Shoab Khan, Chancellor, Sir Syed Case, Islamabad (Member of AIC) and two representatives from NCEAC Secretariat.

It was the first visit which was conducted online due to COVID-19 pandemic. The visit was very useful and planned in a good manner. All the standards of NCEAC Criteria were covered through deep evaluation and the duration of visit was 9:00 am to 5:00 pm as per the schedule. The Inspection team interviewed graduating/graduated batches during the online accreditation process.
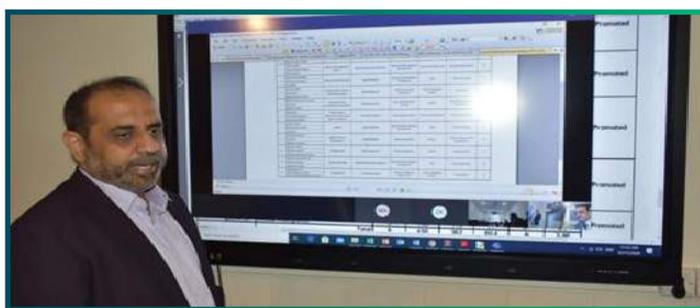
2. Sukkur Institute of Business Administration, Sukkur

The Accreditation Visit for BS Computer Science & BS Software Engineering (Fall 2016, Fall 2017, Fall 2018) of Sukkur Institute of Business Administration, Sukkur was effectively organized on 01 March 2021 by NCEAC Secretariat. Three Members Committee was constituted for BSCS & BSSE Programs. Prof. Dr. Zubair Ahmad Sheikh, President MAJU, Karachi was the Convener of AIC, Dr. Aftab Ahmad Sheikh, Professor, Sindh Madresatul Islam, Karachi was AIC Member and Dr. Aqeel Ur Rehman,

Professor, Sir Syed University of Engineering and Technology, Karachi was AIC Member too.

3. National Textile University, Faisalabad

The Accreditation Visit for BS Software Engineering (Fall 2016, Fall 2017, Fall 2018) and BS Information Technology (Fall 2017, Fall 2018, Fall 2019) of National Textile University, Faisalabad was successfully arranged on 22 February 2021 by NCEAC Secretariat. Three Committee members evaluated both the programs. Convener of AIC was Prof. Dr. Shoab A Khan, Chancellor Sir Syed Case, Islamabad, AIC Members was Dr. Muhammad Shahbaz, Professor UET, Lahore and Dr. Manzoor Ilahi Tamimy, HOD, COMSATS, Islamabad.

The comments of AIC was that the university had made a good effort to develop its own LMS. The department is gradually moving towards OBE system. Though there are lots of weaknesses and hurdles at this stage but it is anticipated that in near future the department would handle all relevant OBE related implementation issues.

Recommended for X Category (two batches). Evaluation Summary of BS Software Engineering Program is as follows:

Though the crisis of COVID-19 Pandemic paralyzed the whole nation, the NCEAC has managed to conduct a number of visits during the reporting period to protect the interest of the students and institutions.

Accredited Institutes between July 1, 2020-June 30, 2021
(List of all Accredited Programs is given in NCEAC website.
URL is given below: https://nceac.org.pk/Accreditation/AccreditedInstitutions)

Zero Visit	
Sr. No.	**Program, Institute**
1.	BS Software Engineering, Air University, Islamabad
2.	BS Software Engineering, Balochistan University of Engineering & Technology, Khuzdar
3.	BS Information Technology, Balochistan University of Engineering & Technology, Khuzdar
4.	BS Data Science, COMSATS University Islamabad, Islamabad
5.	BS Cyber Security, COMSATS University Islamabad, Islamabad
6.	BS Artificial Intelligence, COMSATS University Islamabad, Islamabad
7.	BS Artificial Intelligence, Hamdard University, Karachi
8.	BS Software Engineering, HITEC University, Taxila
9.	BS Computer Science, Institute of Space Technology, Islamabad
10.	BS Artificial Intelligence, Iqra University, Islamabad
11.	BS Software Engineering, Khawaja Freed University of Engineering & Information Technology, Rahim Yar Khan
12.	BS Software Engineering, National University of Computer & Emerging Sciences, Islamabad
13.	BS Artificial Intelligence, National University of Computer & Emerging Sciences, Karachi
14.	BS Cyber Security, National University of Computer & Emerging Sciences, Karachi
15.	BS Software Engineering, National University of Computer & Emerging Sciences, Karachi
16.	BS Computer Science, National University of Sciences & Technology, Quetta
17.	BS Software Engineering, Newport Institute of Communications & Economics, Karachi
18.	BS Computer Science, Preston University Kohat, Kohat
19.	BS Cyber Security, Riphah International University, Faisalabad
20.	BS Software Engineering, University of Engineering & Technology, Lahore, Kala shah Kako

Interim Visit	
Sr. No.	**Program, Institute**
1.	BS Information Technology, Air University, Islamabad
2.	BS Cyber Security, Air University, Islamabad
3.	BS Computer Science, Barret Hodgson University, Karachi
4.	BS Computer Science, National University of Technology, Islamabad
5.	BS Software Engineering, Zia-ud-Din University, Karachi

Accreditation Visit	
Sr. No.	**Program, Institute**
1.	BS Computer Science, Abasyn University, Islamabad
2.	BS Computer Science, Abasyn University, Peshawar
3.	BS Software Engineering, Abasyn University, Peshawar
4.	BS Computer Science, Air University, Multan
5.	BS Computer Science, Bahauddin Zakariya University, Multan
6.	BS Information Technology, Bahria University, Karachi
7.	BS Computer Science, Bahria University, Karachi
8.	BS Computer Science, Balochistan University of Engineering & Technology, Khuzdar
9.	BS Software Engineering, Capital University of Science & Technology, Islamabad
10.	BS Computer Science, Capital University of Science & Technology, Islamabad
11.	BS Computer Science, CECOS University of Information Technology & Emerging Sciences, Peshawar
12.	BS Software Engineering, CECOS University of Information Technology & Emerging Sciences, Peshawar
13.	BS Computer Science, Center for Advanced Studies in Engineering (CASE), Islamabad
14.	BS Software Engineering, COMSATS University Islamabad , Lahore
15.	BS Software Engineering, COMSATS University Islamabad , Wah
16.	BS Computer Science, COMSATS University Islamabad , Wah
17.	BS Computer Science, Forman Christian College, Lahore
18.	BS Software Engineering, Hamdard University, Karachi
19.	BS Computer Science, Hamdard University, Karachi
20.	BS Computer Science, National Textile University, Faisalabad
21.	BS Information Technology, National Textile University, Faisalabad

| Accreditation Visit	
Sr. No.	**Program, Institute**
22.	BS Software Engineering, National Textile University, Faisalabad
23.	BS Computer Science, National University of Computer & Emerging Sciences, Chiniot, Faisalabad
24.	BS Software Engineering, National University of Modern Languages, Islamabad
25.	BS Computer Science, Riphah International University, Faisalabad
26.	BS Software Engineering, Riphah International University, Islamabad
27.	BS Software Engineering, Sukkur Institute of Business Administration, Sukkur
28.	BS Computer Science, Sukkur Institute of Business Administration, Sukkur
29.	BS Software Engineering, University of Azad Jammu & Kashmir, Muzaffarabad
30.	BS Computer Science, University of Engineering & Technology, Lahore
31.	BS Computer Science, University of Engineering & Technology, Lahore, Kala shah Kako
32.	BS Computer Science, University of Engineering & Technology, Taxila, Rawalpindi
33.	BS Computer Science, University of Lahore, Islamabad (Intake stopped after Fall 2019)
34.	BS Software Engineering, University of Lahore, Islamabad (Intake stopped after Fall 2019)
35.	BS Information Technology, Women University of Azad Jammu & Kashmir, Bagh

D. Program Evaluators

Distinguished senior faculty members in computing domain are appointed as Program Evaluators from both public and private Sector reputed Universities from different regions. Evaluators are PhD in relevant field, with at least five years post PhD experience and at least 3 years teaching experience. NCEAC have currently 254

| S.No.	Region	Convener	Member
1.	AJK	-	2
2.	Balochistan	1	3
3.	Gilgit Baltistan	-	-
4.	Islamabad	15	57
5.	KPK	3	24
6.	Punjab	18	66
7.	Sindh	5	60

Program Evaluators in which 42 are conveners and 212 are Members. Council inducted 125 new Program Evaluators in 2020-2021. The table and below graph show region wise distribution of Program Evaluators.

In a circle of Program Evaluators comprised Professors, Associate Professors and Assistant Professors of the Public and Private Institutions. Out of 254 Program Evaluators in which 97 are Professors, 127 Associate Professors and 30 Assistant Professors.

Region Wise Evaluators Statistics
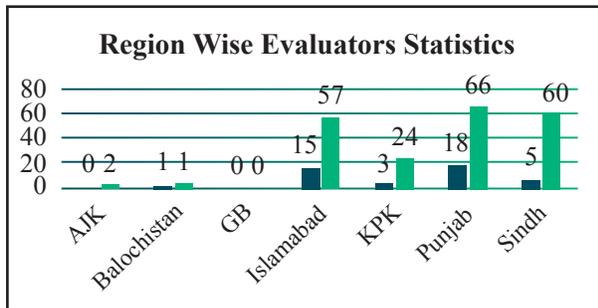
In a circle of Program Evaluators comprised Professors, Associate Professors and Assistant Professors of the Public and Private Institutions. Out of 254 Program Evaluators in which 97 are Professors, 127 Associate Professors and 30 Assistant Professors.

The below graph shows designation wise distribution and visit of PE's.

Designation Wise Distribution of PE's and Visits
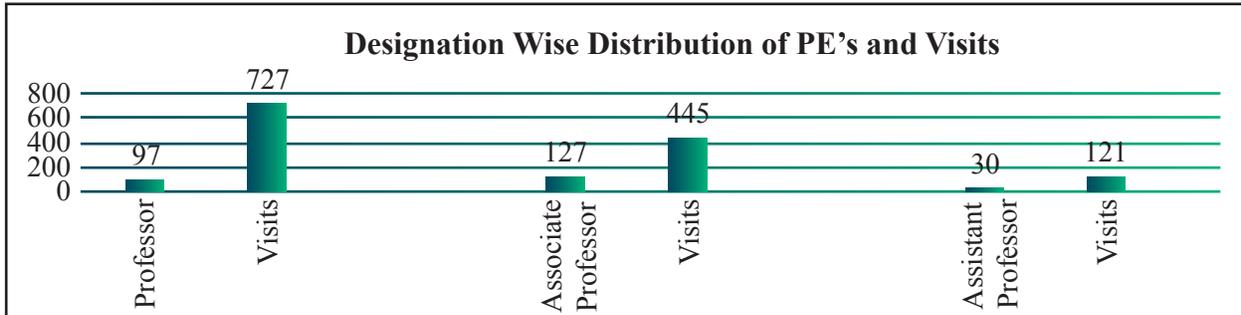
In NCEAC online Accreditation system, Program Evaluators data is maintained as individually. So the profile of each evaluator is given with all the details as prescribed standard. Two Profiles of NCEAC Convener and Member are given in the graph below. Profiles of all program evaluators are available on the official website of the Council.

Prof. Dr. Jamil Ahmad Convener AIC

Dr. Jamil Ahmad
Convener

Dr. Jamil Ahmad's Info

Designaton:	Vice Chancellor
Institute/Industry:	Hazara University, Mansehra
Email:	jamil@ieee.org
Status:	Active

Total Visits	Visits as Convener	Visits as Member
42	35	7

Last Visit

INSTITUTE	PROGRAM	VISIT TYPE	VISIT AS	VISIT DATE
Ghulam Ishaq Khan Institute of Engineering Science & Technology, Swabi	BS Computer Science	Accreditation Visit	Member	26 Oct, 2021

Accreditation Visit Category Statistics
Total Accreditation Visits: 33

Y 24.2%
X 39.4%
W 36.4%

Prof. Dr. Asia Khanum Member AIC

Dr. Aasia Khanum
Member

Dr. Aasia Khanum's Info

Designaton:	Assistant Professor
Institute/Industry:	Forman Christian College, Lahore
Email:	aasiakhanum@fccollege.edu.pk
Contact Number:	

Total Visits	Visits as Convener	Visits as Member
7	0	7

Last Visit

INSTITUTE	PROGRAM	VISIT TYPE	VISIT AS	VISIT DATE
Kinnaird College for Women, Lahore	BS Computer Science	Accreditation Visit	Member	08 Aug, 2019

Accreditation Visit Category Statistics
Total Accreditation Visits: 7

X 14.3%
W 14.3%
Y 57.1%
Rejected 14.3%
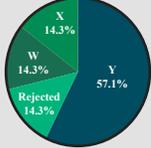
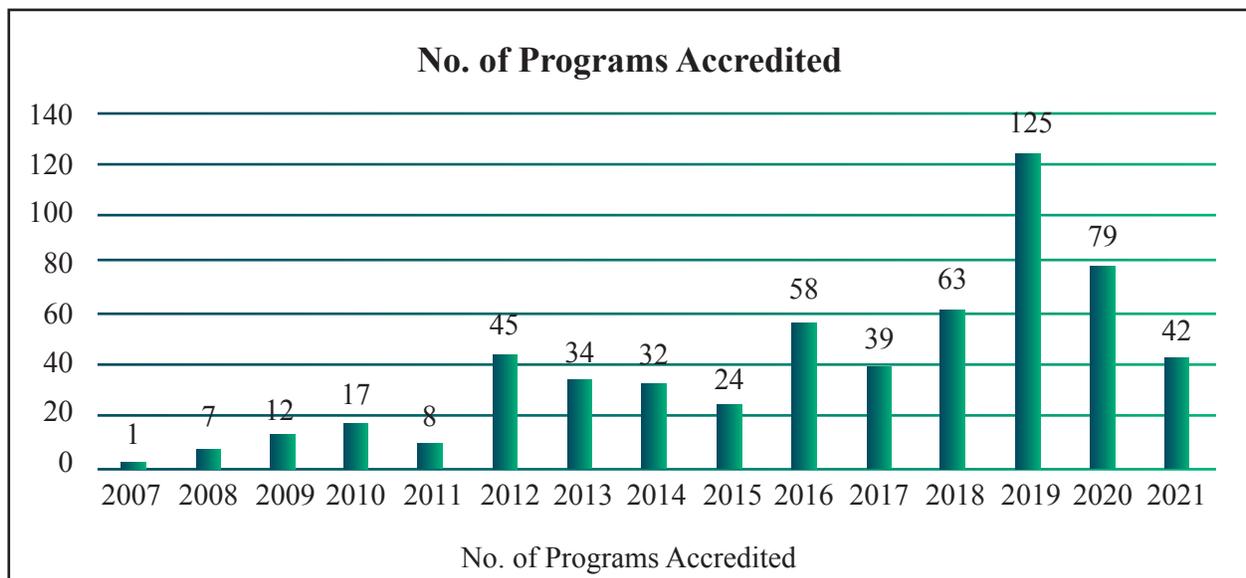# ANALYSIS OF THE ACCREDITATION IN THE CONTEXT OF INSTITUTES
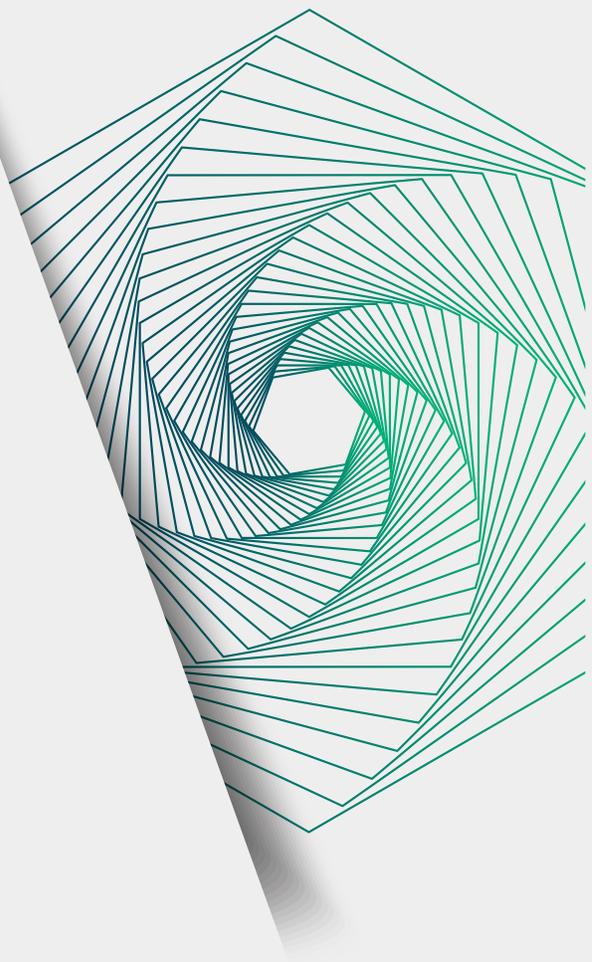
Analysis of the Accreditation in the context of Institutes

As mentioned before that the accreditation progress over the years is one of the remarkable achievement of the Council.
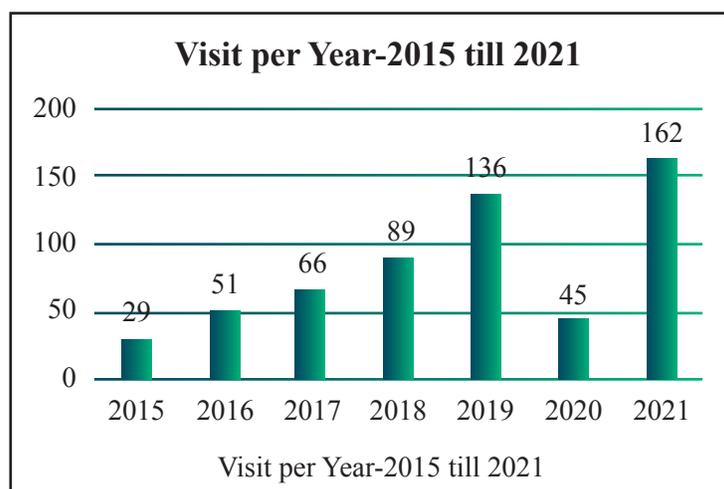
A.   Accreditation record in term of Institutions

Since the inception of NCEAC, computing education in Pakistan made significant progress. The Council as a facilitator to review the quality of computing program also played significant role in this regard. The graphic analysis below shows the overall performance till the year 2020. The analysis shows that the Council made great progress.

No. of Programs Accredited

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
No. of Programs Accredited	1	7	12	17	8	45	34	32	24	58	39	63	125	79	42

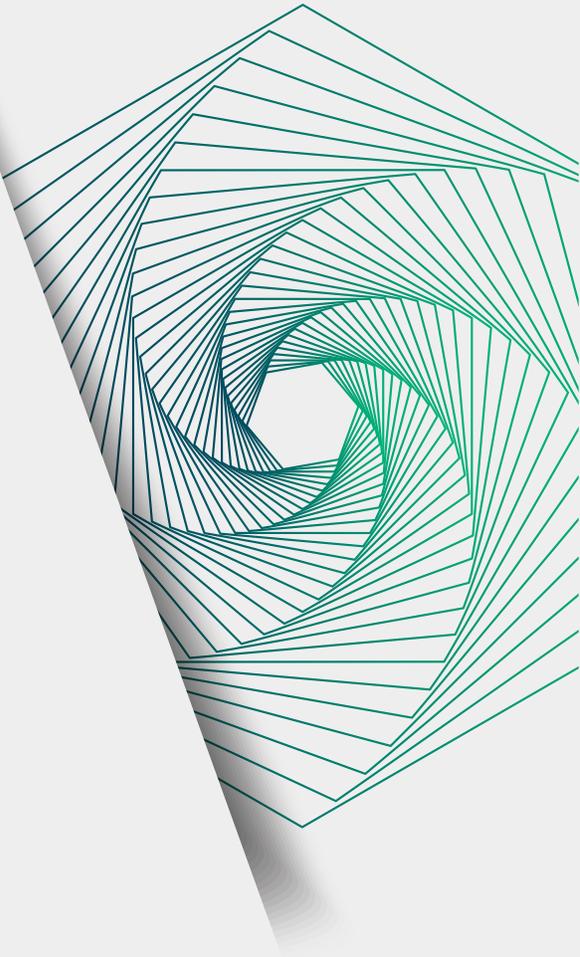No. of Programs Accredited

B.   Visits Progress over the last five years.

Similarly, the number of visits for year have been increased tremendously. In order to make an excellent operation of the Council activities, the Council established a team of highly qualified individuals who are working very hard to make NCEAC one of the leading accreditation body at the Country. The graph below shows the analysis of visits per year (from 2015 till the end of 2019) in terms the number. The graphs shows that the visits per have been increased by many folds.

Visit per Year-2015 till 2021

Year	2015	2016	2017	2018	2019	2020	2021
Visit per Year	29	51	66	89	136	45	162

Visit per Year-2015 till 2021

MEETINGS & OTHER ENGAGEMENTS

A. General Council and Accreditation Standard Committee Meetings

The NCEAC General Council (GC) meets on regular basis primly to evaluate the reports submitted by the AIC in the result of accreditation visits. The GC is an authorized body to decide about accreditation. The GC analysed all reports with great care. The decision of how many batches can be awarded accreditation is made by the GC. The size of intake per batch is also considered and approved by the GC. Other operational matters are also considered in these meetings. During the Financial Year 2020-21, NCEAC held Two General Council Meetings. In these Meetings, 68 degree programs of 44 Institutes were accredited.

B. Curriculum Review Committee Meeting

NCEAC organized Curriculum Review Meetings on March 2, 2021 in LI Hall, H-8, Islamabad. Prof. Dr. Syed Mansoor Sarwar, Chairperson NCEAC chaired the meeting. Dr. Jamil Ahmad, Vice Chairperson, Dr. Jamil Sawar from Barani Institute Rawalpindi, Dr. Shoab A Khan from CASE, Islamabad and Dr. Zartash Afzal Uzmi, Director Confiz Ltd was the Members of the committee. The agenda of the Meeting was to review the Associate Degree Programs and to revise a curriculum of BS Computer Science, BS Software Engineering, BS Information Technology, BS Bio Informatics, BS Artificial Intelligence, BS Data Science & BS Cyber Security Programs. The Meeting was fruitful with the decision that NCEAC will be developed the curriculum for Associate Degree Program and also to revise the Curriculum of Computing Programs.

Curriculum Review Committee Meeting (March 2, 2021)

C. Meetings on Industry and Academia Collaboration

Meetings of Industry –Academia Collaboration and linkages organized by National Computing Education Accreditation Council - NCEAC last year at Higher Education Commission, Pakistan. Representatives from Academia, MTBC, Trillium Information Security Systems, Pakistan Agile Development Society, RedBuffer, Vizteck Solutions, Zigron Pakistan (Pvt) Ltd. Pakistan Software Houses Association (PASHA) and Khyber Pakhtunkhwa Information Technology Board - KPITB

joined the session and shared their valuable suggestion.

The purpose of the meeting was to brainstorm for improving Industry-Academia collaboration and linkages. It was good effort to engage industry persons in academia to polish the skills of the Students as industry needs. Collaboration with Academia - Industry will also be effective to engage faculty members in specialized fields like Artificial Intelligence, Deep Learning, Data Mining & Cyber Security as per requirements of industry.
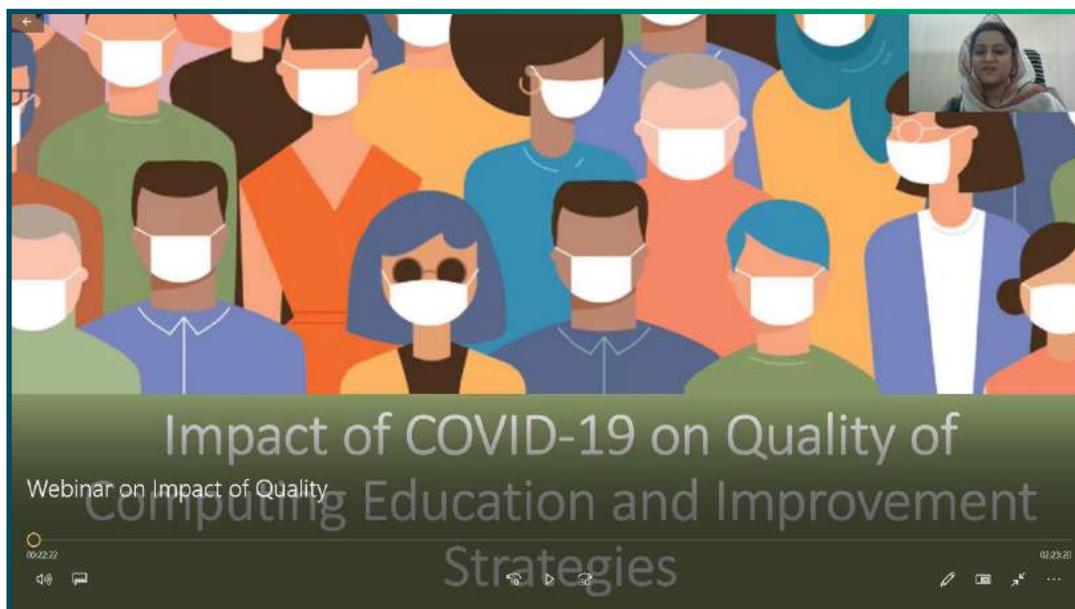

D. Webinar Trainings

In 2020-21 NCEAC initiates the webinars trainings for Computing Faculty. These Webinars were online and scheduled on Zoom in HEC Islamabad on March 30, 2020 & July 14, 2021. The Initiative was aimed to train the computing faculty to improve the quality of computing education and the capacity building of computing faculty. Also the purpose was to setup the online training procedures due to COVID pandemic. Hence the IT team developed the Online Event Management System for the trainings of Faculty, Program Evaluators and Students. In 2020-21 council arranged the following Webinar training Sessions:

1. Impact on Quality of Computing Education during COVID-19 and Improvement Strategies. The trainer was Prof. Dr. Shoab A Khan, Chancellor, Sir Syed CASE Institute of Technology, Islamabad. Almost 250 faculty members attended the training session with the good learning-outcomes. The objectives to organize the session were to identify the strategies to cope up the

challenges and hurdles during Covid-19 and to discuss the best practices and NCEAC implementation plan to compete these challenges for improving the quality of computing Education.

Webinar Training Session (March 30, 2020)

2. Quality and Quality Assurance of E-Learning. The trainer was Prof. Dr. Zubair Ahmad Shaikh, Presidents MAJU, Karachi. Total 97 participants attended the session and this session was also beneficial for computing faculty. The learning outcomes were to learn the assessment of quality of online courses, feedback mechanisms and enhancing the content, working together with students, evaluation options in e-learning, and developing new concepts of assessment for e-learning. Till now NCEAC trained 326 faculty Members. The training sessions will be continued for the improvement of quality of computing education.
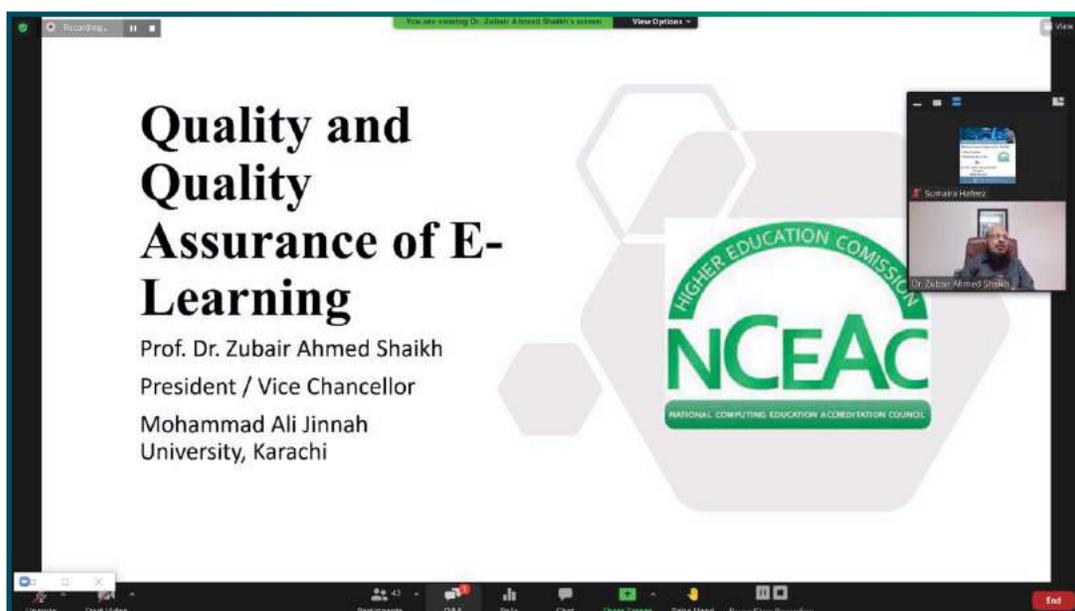
Webinar Training Session (March 2, 2021)

E. Region Wise Training Seminars on Computer Technologies & OBE Training Workshops

NCEAC conducted twelve training seminars in 2019 were arranged with the collaboration of HEC, NCEAC and Pakistan Software House Association (P@SHA) in Islamabad, Lahore, Karachi and Peshawar. Out of twelve seminars, five were held in Islamabad, two in Lahore, four in Karachi and one in Peshawar. The purpose was to learn about following emerging fields in Computer Science. Also to learn about high-level concepts and the main ideas underlying these emerging technologies. These seminars were attended by more than 150 participants. The Resource Persons for these seminars belonged to both academia and industry. They provided training on the following five topics:

- ❈ Blockchain
- ❈ Machine Learning
- ❈ Data Analytics and Big Data
- ❈ Cyber Security, and
- ❈ Open Stack and Cloud Computing

The overall feedback from the participants was positive, and they showed interest in having another follow-up session on the same topic. The participants appreciated the hands-on training. NCEAC is planning to arrange such kind of Seminars for computing students with the engagement of Industry representatives.

In 2019 Region wise Outcome based training workshops were conducted for Program Evaluators with the collaboration of QAA-HEC. Prof. Dr. Shoab A Khan, Professor, Chancellor, CASE, Islamabad was the resource person. These training were conducted following regions:

1. LI Hall, HEC, Islamabad (March 3, 2019)
2. HEC Regional Center, Karachi (March 30, 2019)
3. HEC Regional Center, Lahore (April 8, 2019)
4. HEC Regional Center, Peshawar (April 23, 2019)

NCEAC is planning to schedule OBE based trainings in 2022 for computing faculty and Institutions to improve the quality of computing education.

NEW
DEVELOPMENTS

A.   Registration of the Graduates of an Accredited Program:

The registration system for the graduates of accredited has been initiated. A flexible and user friendly website has been developed in this regard. Graduates are required to apply using this portal. After successful application they are assigned registration card as shown below. So far as 172 graduates of accredited programs have been registered. The number is growing day – by – day. NCEAC Registration card for Computing Graduates is as follows:
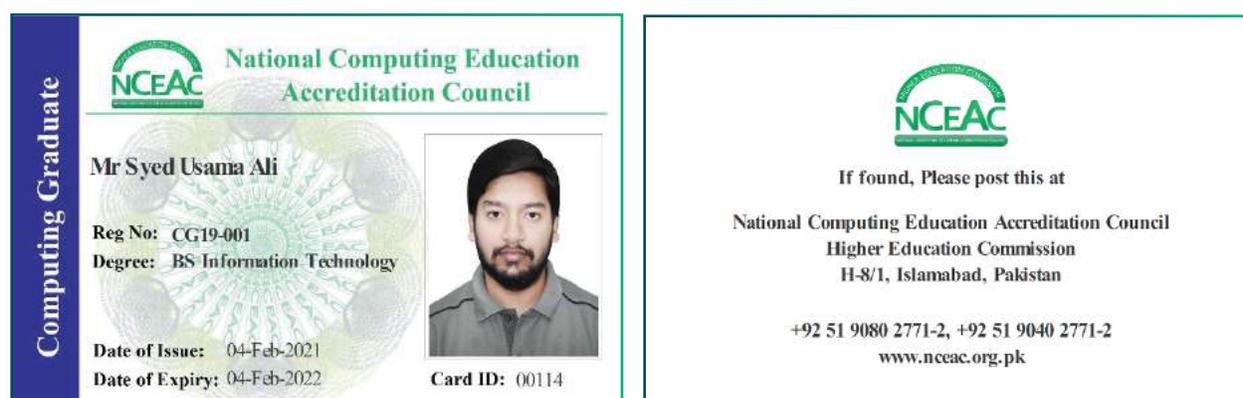
B.   New Programs (Artificial Intelligence, Data Science & Cyber Security)

In order to impart quality education, meet local needs and international standards, NCEAC-CRC has developed unified framework/templates as guidelines for the development and revision of curricula in the Computing discipline. It includes both existing domains and the emerging domains. In 2017, the HEC-NCRC prepared curriculum for following computing degree programs.

1. BS (Computer Science)
2. BS (Software Engineering)
3. BS (Information Technology)

In view of the changing world of computing, in 2020 NCEAC-CRC developed curriculum for following additional programs.

1. BS (Artificial Intelligence)
2. BS (Data Science)
3. BS (Cyber Security)

The universities may like to offer these as separate degree programs, or as specialization/major under a generic BS (Computer Science) program. Now NCEAC Accredited 27 additional Programs (BSAI, BSDS & BS Cyber Security) in the year 2020-2021.

C.   Automation of Accreditation

NCEAC has developed an online comprehensive system to automate accreditation process. The system is known as "Accreditation Automation System" which was launched on January 15, 2019.

The online system received a remarkable response from both institutions and reviewers. The system has an added advantage of removing lengthy procedures and wastage of papers. This is one of the great achievements made the council to support green and environmental friendly practices. After the launching of this system the Council received huge data on various aspects which will not be only useful for accreditation but also useful for the Government and industries for review and to make decisions. The following pic shows a dashboard of online Accreditation Automation system:
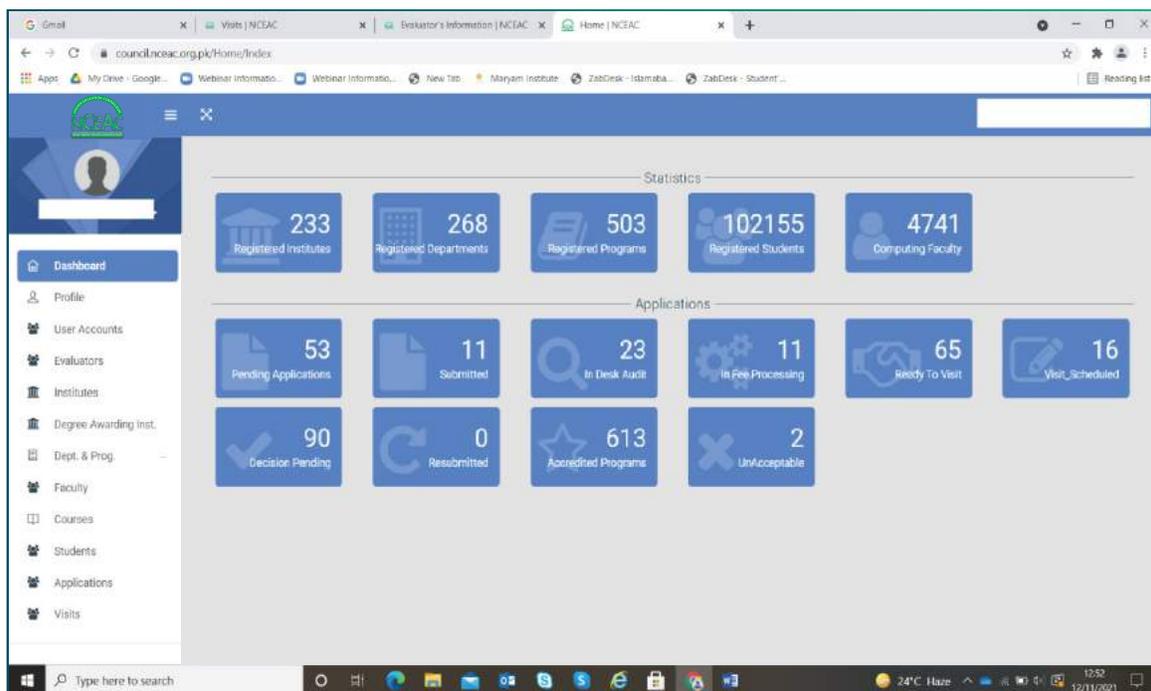
D.   Online Application Accreditation System

The online application submission is part of the AAS. The AAS is highly flexible and user-friendly system which is available on the URL **https://accredit.nceac.org.pk**. All institutes have to submit their accreditation application through online system. No paper based application shall be acceptable anymore. In order to proceed with online accreditation application, an institute needs to have login of AAS System. The institute is required to contact NCEAC for creating login and registration of Focal Person (FP) in the AAS. After the registration of Focal Person (FP) for the program, he/she will be required to upload application through online system (As mentioned in step no. 2 in the below table).

Stepwise Process

Step	Description
1.	❖ **Note:** The Institutes seeking accreditation shall access the official website **https://accredit.nceac.org.pk/** for registration, creating login user-id and institute profile. During the registration, the institute will appoint a focal person (FP) to complete the entire process of accreditation. The same website/online portal can be used for all types of applications (such as Zero visit, interim visit and accreditation/re-accreditation visit).
2.	❖ **After the successful completion of step 1, the FP shall upload all required information about the program which is under the accreditation process.** ❖ **The FP is required to take extra care to enter information. All information must be certified and a true representation of facilities available for the program at the institute.** ❖ **The outcome of the accreditation process is based on the information provided by institute.** ❖ **The authenticity of the information is validated by the field audit team (inspection committee - AIC).**
3.	❖ **NCEAC will perform Desk Audit of submitted application. The institute will be informed about the outcome of the audit. In case the desk audit is successful, the institute will be asked to deposit fee as per the approved rates, otherwise the institute will be informed about the shortcomings.**
4.	❖ **NCEAC appoints AIC for the field visit to the institute. Login credentials are created for AIC members. The field visit is performed as per the mutual agreed date between AIC members, NCEAC and the Institute.**
5.	❖ **AIC members submit their report online through the evaluator panel. All findings & outcomes of the visit are submitted as per the standard forms.**
6.	❖ **NCEAC shares the report online with the respective institute and allows it to submit comments (if any) on the AIC report by the deadline. After the deadline, the 'no comments' will be automatically considered by the system.**
7.	❖ **AIC report along with institute's comments (if any) will be placed to the Accreditation Standard Committee (ASC) for final decision. ASC analyzes all cases and makes recommendations for the final approval of the General Council (GC).** ❖ **The above decision/outcome of the accreditation process is shared with the Institute for compliance and implementation.**
8.	❖ **After approval of GC, decision will be shared with institute and uploaded to the NCEAC official website.**

FUTURE PLANS

A.   Integrated Curriculum

Curriculum, with varying definitions, is a plan of the teaching-learning process that students of an academic program are required to undergo to achieve specific objectives. It includes a scheme of studies, objectives & learning outcomes, course contents, teaching methodologies and assessment/ evaluation. Since knowledge in all disciplines and fields is expanding at a fast pace and new disciplines are also emerging; it is imperative that curricula be developed and revised accordingly.

NCEAC undertook the development and revision of curricula through its NCEAC Curriculum Revision Committee (NCEAC-CRC) which consisted of eminent professors and researchers of relevant fields from public and private sector universities and professionals from the industry. The revision of curricula formed in year 2017 & 2020 with additional Computing Programs.

In order to impart quality education, meet local needs and international standards, NCEAC CRC is again revising the curricula of computing discipline with unified framework/templates. It will includes both existing domains and the emerging domains. It is hoped that this revision of curriculum document, would serve the purpose of meeting our national, social and economic needs, and it would also make it compatible with international educational standards.

Two curriculum review committee meetings has been conducted in the last year for the revision curriculum of computing programs (BSCS, BSSE, BSIT, BSIS, BS Bioinformatics, BS Artificial Intelligence, BS Data Science & BS Cyber Security). It was debated that the integration of curriculum as per the quality standards are important. So, curriculums of BS Computing degree programs need to be aligned with international practices. NCEAC CRC Committee will submit the final draft of BS Commuting Curriculum to NCEAC General Council. Hopefully in January 2022 NCEAC will publish the revised curriculum of BSCS, BSSE, BSIT, BSIS, BS Bioinformatics, BS Artificial Intelligence, BS Data Science & BS Cyber Security Programs.

B.   OBE Based Education

In 2019 NCEAC organized four Training Workshops with the collaboration of Quality Assurance Agency (QAA), HEC on Outcome Based Education (OBE) at Lahore, Karachi, Islamabad & Peshawar which is conducted by Dr. Shoab A Khan. The objective was to exchange views and experiences on international best practices for accreditation of computing degree programs and their effectiveness in quality enhancement. The training may consist of the following aspects.

- ❖ International Accreditation for Computing Programs (Seoul Accord, membership & monitoring Procedures, Seoul Accord Graduate Attributes & guiding Attributes of Program Evaluators)
- ❖ Outcome Based Accreditation
- ❖ ABET's Involvement with Outcomes-Based Accreditation
- ❖ Effect of Outcomes-Based Accreditation on Mutual Recognition Accords Assessment Exercise and Interaction with Stakeholders

- ❖ Recent Trends in ABET
- ❖ Some Observations on Implementing Outcomes Assessment
- ❖ Benefits to NCEAC for the adoption of Outcome Based Accreditation and getting the Membership for International Accreditation of Computing Programs

NCEAC is planning to launch Outcome Based Education and Accreditation System in future. For that purpose council is designing to arrange region wise training sessions for the Institutes.

C.   Seoul Accord Preparation

During the last two decades, Pakistan has seen tremendous growth in higher education sector. Some Pakistani universities have already been included in top 500 international universities, and many others are following the steps. Recently, there is an increasing trend among various universities to start different computing programs with focus on areas such as artificial intelligence, data science, cyber security etc. Although, this is a healthy trend and will enable Pakistan to produce individual which will be better suited for a progressive Pakistan in the future, it is very important to ensure that the institutions delivering such programs maintain the requisite quality so that a proper ecosystem is developed for the individuals enrolling in such programs in terms of employability and utilization. In this context, it will be very useful to follow the world best practices on the lines of the Washington accord for the accreditation of engineering programs to which Pakistan has been added as a signatory.

The Seoul Accord is an international accreditation agreement for professional computing and information technology academic degrees, between the bodies responsible for accreditation in its signatory countries. The Accord covers tertiary undergraduate computing degrees. This agreement mutually recognizes tertiary level computing and IT qualifications between the signatory agencies. Graduates of accredited programs in any of the signatory countries are recognized by the other signatory countries as having met the academic requirements as IT professionals. We plan to maintain the quality of the computing programs by accrediting the programs from Seoul Accord, eventually maintaining the quality of computing education in the country.

Our aims to implement the Seoul accord for the accreditation of computing programs nation-wide. The plan will be implemented in two phases: 1. Training the master trainers, and 2. Massive roll-out on the national level to properly execute the accreditation of computing programs.

D.   Further Upcoming Measures in 2022

- ❖ Improving quality of computing graduates through input of graduates and experts from industry
- ❖ Development of NCEAC Accreditation Manual for the Institutions, Program Evaluators and other stakeholders.
- ❖ Registration of Non Accredited Institutes/Campuses/Colleges.

- ❖ Region Wise Training Workshops on International Practices of Accreditation System for Program Evaluators.
- ❖ Webinar Trainings for Faculty of Computing and Computing graduates.
- ❖ Region Wise Seminars regarding NCEAC Criteria's and standards.
- ❖ Accreditation Inspection Visits of Accredited and non-Accredited Institutions.
- ❖ Induction & Training of new Program Evaluators for Accreditation Inspection Committee

Picture Gallery
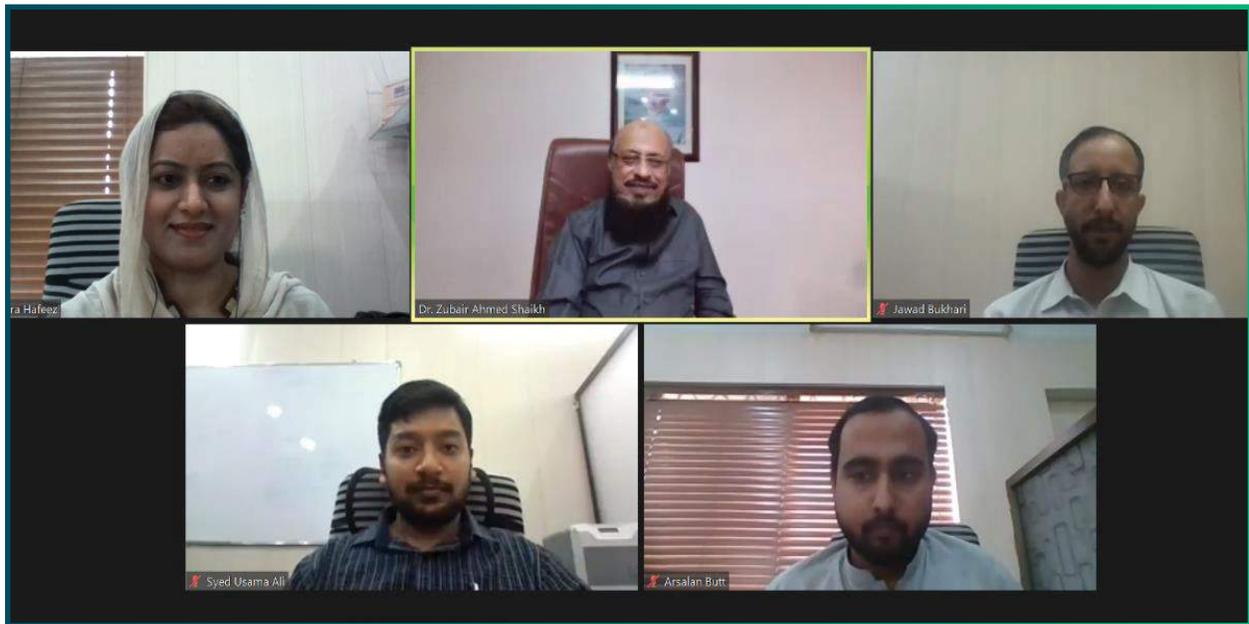
Webinar Training June 14, 2021 conducted by Dr. Zubair A Shaikh

Curriculum Review Committee Meeting November 28, 2020

Accreditation Inspection Visit IBA Sukkar March 1, 2021

NCEAC 38th General Council Meeting Chaired by Prof. Dr. Syed Mansoor Sarwar Dec 17, 2020

Webinar Training March 30, 2020 conducted by Dr. Shoab A Khan

NCEAC Staff Meeting with General Council Members Nov 14, 2020

National Computing Education
Accreditation Council
NCEAC Secretariat, Room No. 14-15, N-Block
HEC, H-8/1, Islamabad-Pakistan.