



National Computing Education
Accreditation Council
(NCEAC)

NCEAC Performance Report
July 2021 – December 2023



Established by
Higher Education Commission
Pakistan



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Chairperson's Message

It is my pleasure to present the report of NCEAC for the period of July 2021-December 2023. I am thankful to the former Chairman Prof. Dr. Aftab Ahmad and Prof. Dr. Ayub Alvi for their dedicated efforts to improve NCEAC as a national accrediting body. I am also thankful to all current and former members of NCEAC for their contributions and support in helping NCEAC 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 universities with accredited computing programs, and the commitment of NCEAC secretariat staff.



I extend my special gratitude to the NCEAC Curriculum Review Committee comprising Prof Dr Jamil Sawar (Convener), Prof Dr Jamil Ahmad, Prof Dr Shoab A Khan and Prof Dr Zartash Afzal Uzmi and representative from PASHA for their focussed diligence in revising the curricula for all existing programs and introducing curricula for BS Gaming and Multimedia & Computer Engineering. I will remiss if I did not mention the able guidance and support of Mr Raza Chohan, Adviser (Academics, Curriculum & NAHE) at HEC.

The accreditation process and the requisite forms that had been in place since 2006 were prepared under the able leadership of the founder chairman, Prof Dr Aftab Ahmad. Dr Muid Mufti and I were other members of the committee. In line with today's academic focus on Outcome Based Education (OBE) and one of the requirements of the Seoul Accord, the council decided to review and revamp the accreditation process and the requisite forms in line with the requirements of OBE system. I am grateful to Prof Dr Muhammad Ali Maud for spearheading the effort to overhaul the system accordingly. The online system was also updated consequently. Thanks also to other members of the team for their contributions: Prof Dr Jamil Ahmad, Prof Dr Shaob Khan, Syed Usama Ali, and Adeel Aftab. I gratefully acknowledge the dedication of Dr Maud and Dr Jamil for conducting training workshops on the new system for the program evaluators in the federal capital and the capitals of all provinces.

I hope that universities offering computing programs will continue to improve their standards with the assistance of NCEAC. Currently, Pakistan produces over 60,000 computing graduates every year, but less than 20% of them are termed as quality graduates by the Pakistan Software Houses Association (P@SHA) and other stakeholders. As chairman of NCEAC, my primary challenge has been to improve the quality of undergraduate computing education in the country so that graduates of these programs are ready to pursue graduate studies and are contributing members of national and multinational software industry from day one. We trying 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.

A handwritten signature in black ink, reading "Syed Mansoor Sarwar".

Prof. Dr. Syed Mansoor Sarwar
Chairman NCEAC

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Members of General Council



Prof. Dr. Syed Mansoor Sarwar
Chairman, NCEAC
Vice Chancellor
UET, Lahore



Prof. Dr. Muhammad Ali Maud
Member NCEAC
Professor Emeritus
UET, Lahore



Prof. Dr. Jamil Ahmad
Vice Chairperson, NCEAC
Vice Chancellor
Hazara University, Mansehra



Prof. Dr. Shoab A Khan
Member NCEAC
Chancellor, Sir Syed CASE IIT,
Islamabad



Dr. Zartash Afzal Uzmi
Member NCEAC
Director, Confiz Solutions Ltd
Lahore



Prof. Dr. Zubair Ahmad Shaikh
Member NCEAC
President, MAJU
Karachi



Prof. Dr. Shafay Shamail
Member NCEAC
Professor, LUMS
Lahore



Dr. Salman Iqbal
Member NCEAC
CEO, Denevonet
Lahore



Prof. Dr. Faisal Ahmad Khan Kakar
Member NCEAC
Pro Vice Chancellor
BUIITEMS, Quetta



Prof. Dr. Nayyer Masood
Member NCEAC
HOD CS, CUST
Islamabad

Secretariat Staff



Muhammad Jawad Hussain
Program Manager



Hafiza Sumaira Hafeez
Program Manager



Adeel Aftab
Software Engineer



Syed Usama Ali
Software Engineer



Abdul Rehman
Accounts Intern



Mudasir Hussain
Technical Intern



Muhammad Tanveer
Photocopy Machine Operator

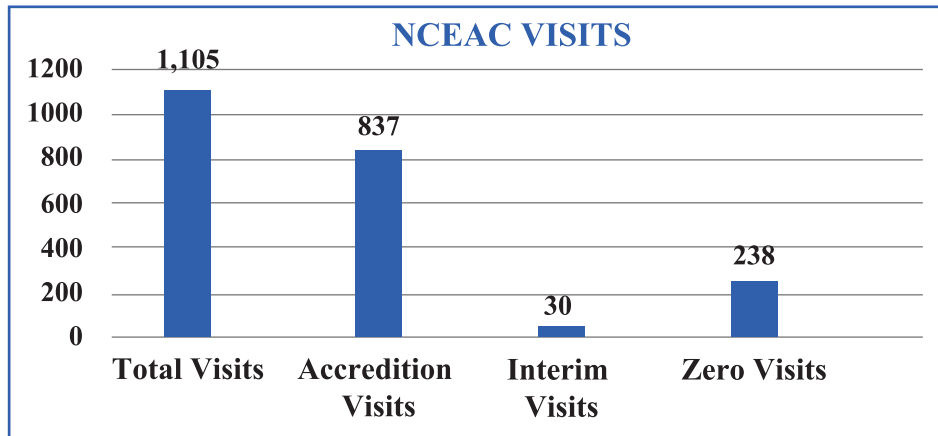
NCEAC at a Glance

Curriculum Development

Since its inception, NCEAC had developed and published computing curricula for the undergraduate computing degree programs in Bioinformatics, Computer Science, Information Technology, Information Systems, and Software Engineering. In 2023, it revised the computing curricula for the existing and new undergraduate programs and introduced the curricula for Associate Degree Programs (ADPs). These curricula were designed by eminent academics, practitioners from the IT industry, representatives from Pakistan Software Export Board, and federal Ministry of Information Technology and Telecommunication. These academic programs and their curricula were approved and published by the HEC. Details of the curricula are given later in the report.

Accreditation

The council has accredited or re-accredited 454 undergraduate computing degree programs of 328 institutes. Total 1105 accreditation visits have been conducted since 2006, including 238 zero visits and 30 interim visits have been conducted. The bar graph shows the data for various visits related to accreditation of computing programs.

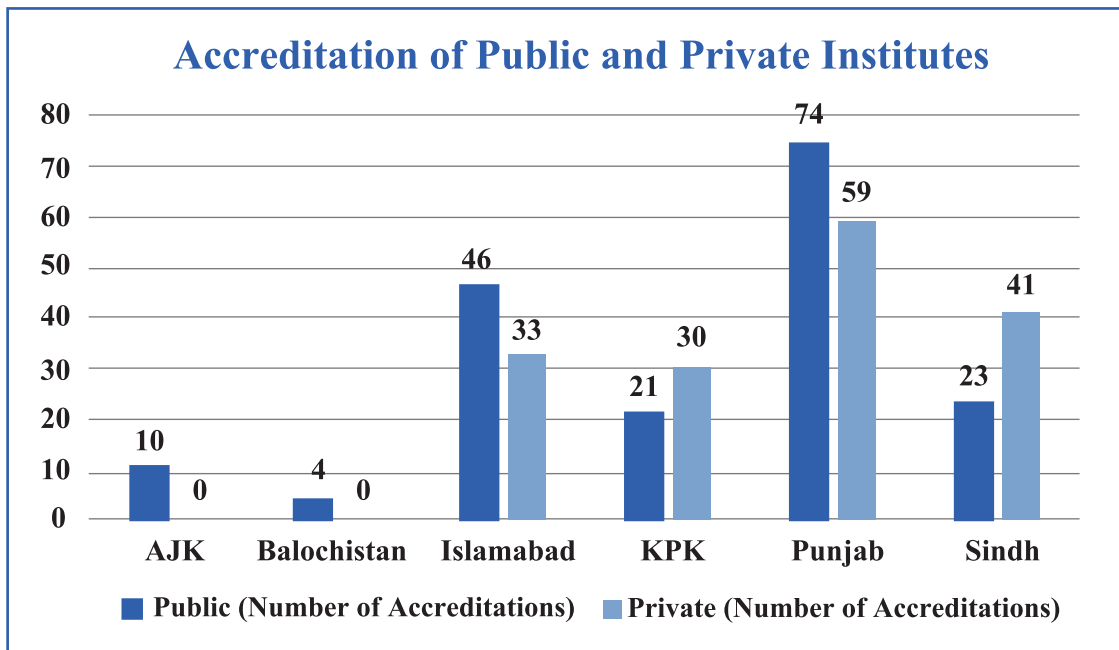


The tables and graphs on this and subsequent pages show the regions wise data for these visits during the period July 1, 2021 to December 31, 2023.

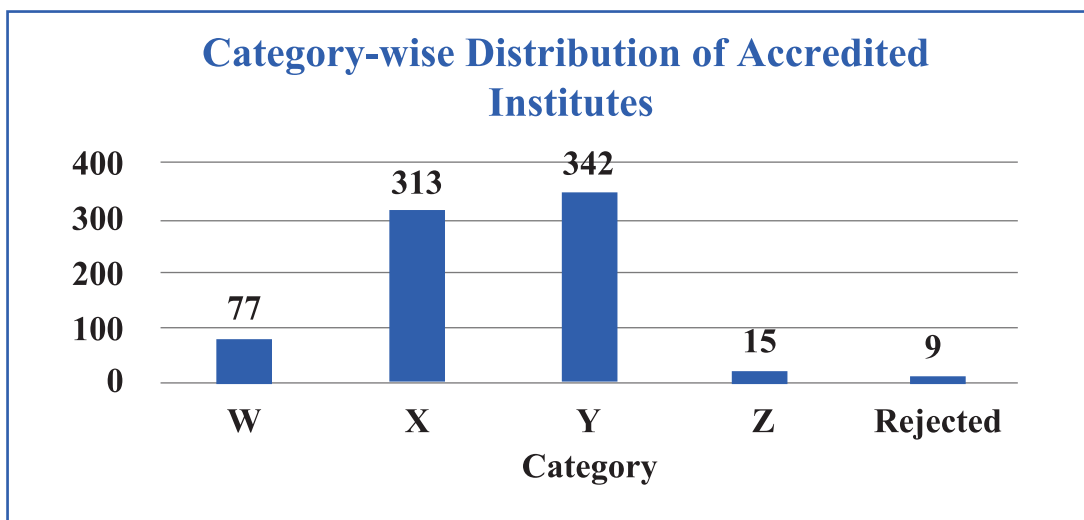
Region Wise Accreditations

Region	Zero Visit	Interim Visit	Accreditation Visit	Total Visit
AJK	3	0	7	10
Balochistan	1	0	3	4
Islamabad	30	3	46	79
KPK	15	2	34	51
Punjab	46	9	78	133
Sindh	31	2	31	64
Total	126	16	199	341

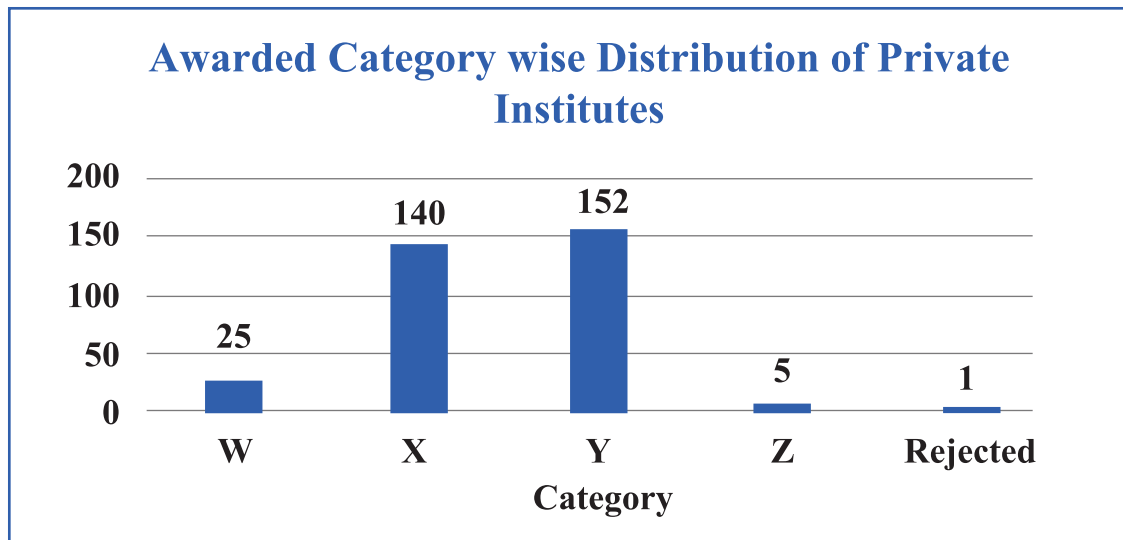
Region Wise Accreditation of Public and Private Institutes



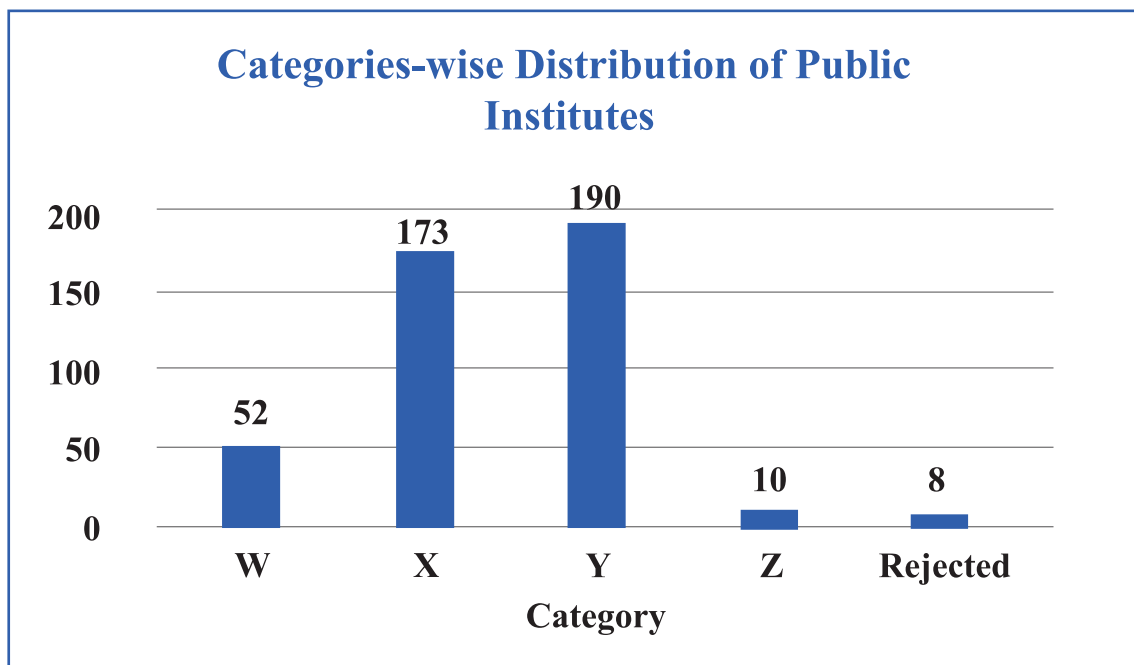
Category-wise Distribution of Accredited Institutes



Category-wise Distribution of Private Institutes



Category-wise Distribution of Public Institutes



Performance During the Reported Period

Accreditation Inspection Visits

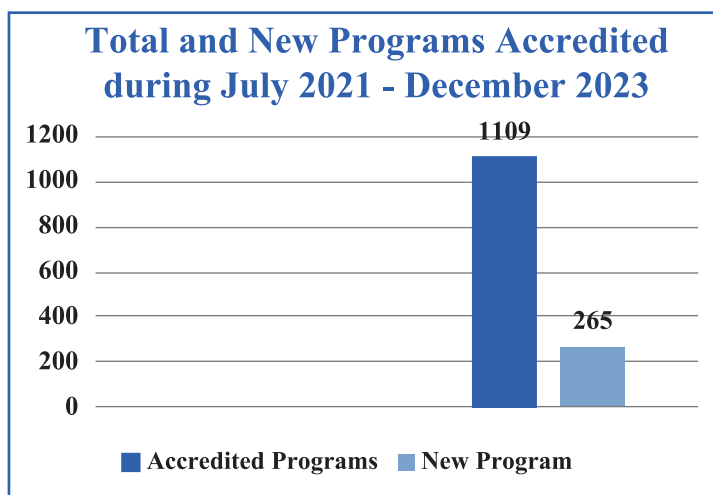
NCEAC arranges visits of different nature through the Accreditation Inspection Committees (AICs). These visits are of four types: Zero, Interim, Accreditation, and Re-accreditation. During the reporting period, 454 programs were accredited. Accreditation, Interim, and Zero visits conducted during the reporting period are given in the following table.

Accreditation, Interim, and Zero Visits Conducted during the Reporting Period				
Month-Year	Accreditation Visit	Interim Visit	Zero Visit	Total
July 2021	0	0	28	28
Aug 2021	4	0	8	12
Sep 2021	5	3	3	11
Oct 2021	28	1	1	30
Nov 2021	23	0	3	26
Dec 2021	10	2	1	13
Jan 2022	2	0	0	2
Feb 2022	10	0	4	14
March 2022	6	2	0	8
April 2022	2	2	6	10
May 2022	9	0	5	14
June 2022	9	3	0	12
July 2022	9	0	6	15
Aug 2022	3	0	5	8
Sep 2022	3	0	5	8
Oct 2022	6	2	4	12
Nov 2022	6	0	6	12
Dec 2022	11	0	7	18

Accreditation, Interim, and Zero Visits Conducted during the Reporting Period				
Month-Year	Accreditation Visit	Interim Visit	Zero Visit	Total
July 2021	0	0	28	28
Aug 2021	4	0	8	12
Sep 2021	5	3	3	11
Oct 2021	28	1	1	30
Nov 2021	23	0	3	26
Dec 2021	10	2	1	13
Jan 2022	2	0	0	2
Feb 2022	10	0	4	14
March 2022	6	2	0	8
April 2022	2	2	6	10
May 2022	9	0	5	14
June 2022	9	3	0	12
July 2022	9	0	6	15
Aug 2022	3	0	5	8
Sep 2022	3	0	5	8
Oct 2022	6	2	4	12
Nov 2022	6	0	6	12
Dec 2022	11	0	7	18

Addition of New Accredited Programs during the FY 2021-23

The graph shows a comparison of new programs accredited during July 2021 – December 2023 and total programs accredited from 2007 – 2021. A total of 1109 programs have been accredited from 2007-2023 and 265 new programs have accredited during the period July 2021 to December 2023. The Zero visits were conducted for the programs proposed to be initiated by the relevant institutions.



Accreditation Visits at a glance

As stated earlier, many visits related to the accreditation of computing programs took place during the reporting period. Highlights of some of these visits are given below.

SZABIST, Karachi

The Zero Visit for the BS Software Engineering program at SZABIST, Karachi was effectively organized on July 25, 2022 by the NCEAC Secretariat. Prof. Dr Abdul Rehman Soomrani, Dean, IBA, Sukkur carried out the visit.



Zia Uddin University, Karachi

The Accreditation Visit for the BS Software Engineering program at Zia Uddin University, Karachi was successfully arranged on November 16, 2022 by the NCEAC Secretariat. Two Committee members evaluated the program. Prof. Dr. Faisal Ahmad Khan Kakar, BUIITEMS, Quetta was the Convener of the Accreditation Inspection Committee (AIC) and



Prof. Dr. Bakhtiar Ahmad Khan Kasi, Professor BUIITEMS, Quetta was the member of AIC.

Total 208 accreditation related visits of universities and affiliated colleges were conducted during 2023. The list of all accredited programs at the various universities/DAIs during the period July 1, 2021 to December 31, 2023 is given on the NCEAC website at the following URL:

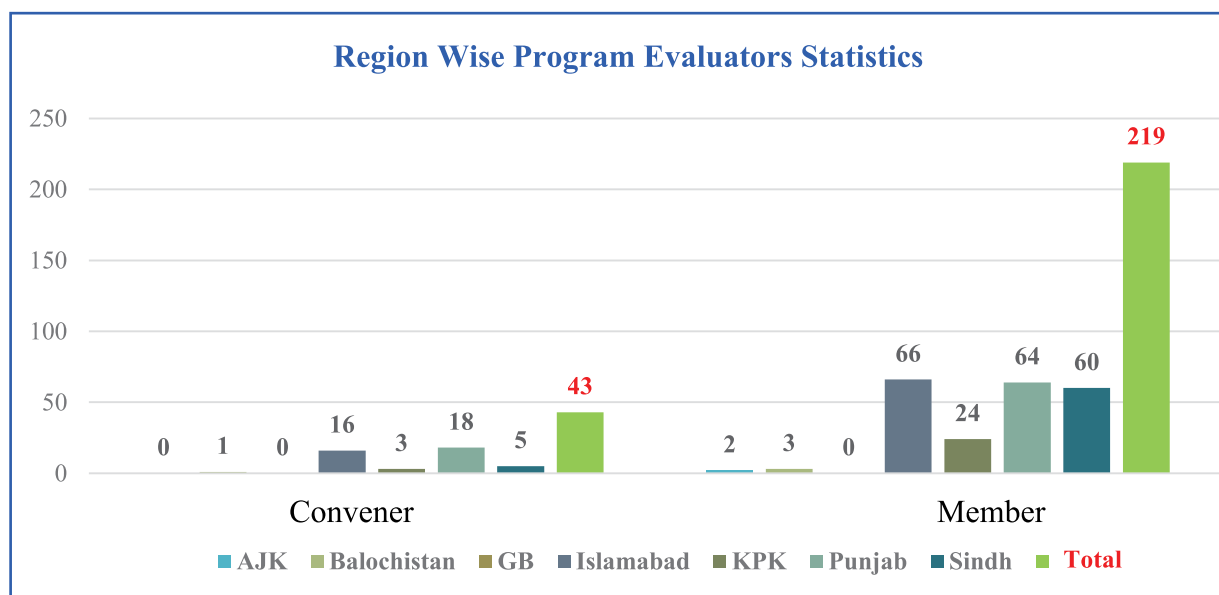
<https://nceac.org.pk/Accreditation/AccreditedInstitutions>

Program Evaluators

Distinguished senior faculty members in computing domain are appointed as Program Evaluators (PEs) from reputed public and private sector institutions from different regions of the country. The PEs hold earned PhD degrees in the relevant field, with at least five years post-PhD experience and minimum 3 years teaching

S. No.	Region	Convener	Member
1.	AJK	-	2
2.	Balochistan	1	3
3.	Gilgit Baltistan	-	-
4.	Islamabad	16	57
5.	KPK	3	24
6.	Punjab	18	66
7.	Sindh	5	60

experience. NCEAC currently has 263 PEs. The table and graph on this page show region wise distribution of PEs. The PEs include Professors, Associate Professors, and Assistant Professors. Out of 263 PEs, 113 are Professors, 116 are Associate Professors, and 34 are Assistant Professors. The bars in green represent total numbers



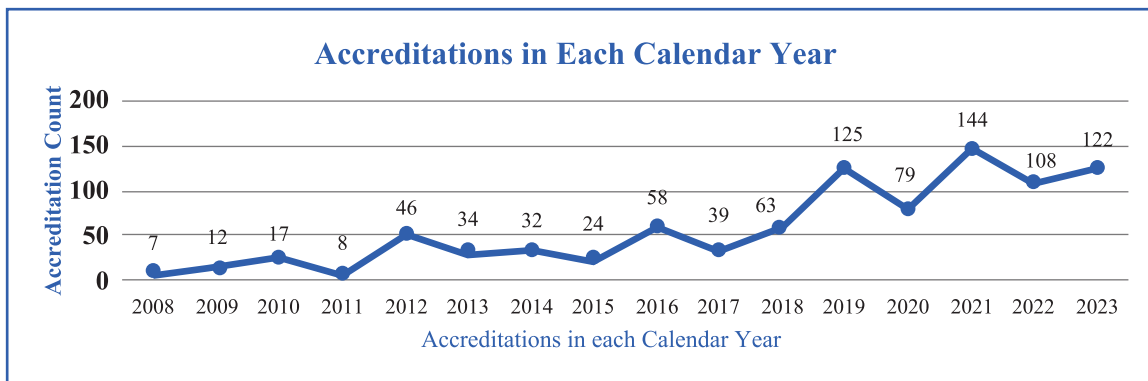
Analysis of Accreditation Visits

Analysis of the Accreditation in the context of Institutes

As can be assessed from the data provided in the prior sections, the accreditation progress over the years is one of the remarkable achievements of the NCEAC. Formed at the same time, NCEAC was the first of the five HEC councils that became financially independent and hasn't requested any funding from the Commission. Around 70% of the 212 HEC-recognized institutions

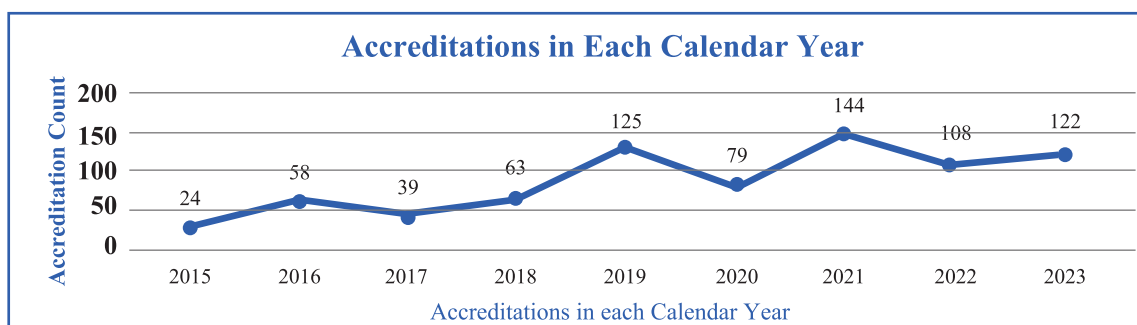
Accreditation Record in Terms of Institutions

Since the inception of NCEAC, computing education in Pakistan has made significant progress. The Council, as a facilitator, reviews the quality of computing programs resulting in significant impact on the quality of computing programs offered nationwide. The graphic view of Accreditation Visits in each calendar from 2008 to 2023 is shown in the accompanying graph.



Progress Since 2015

The Council Secretariat comprises of a team of competent and qualified staff members. The Secretariat is responsibly conducting its activities ranging from receiving accreditation applications, desk audit, management of field visits, and processing the visit reports for evaluation by Accreditation Standards Committee (ASC) and the General Council (GC). The automation team of the Secretariat has been leading all other councils in developing the software for ease of submission of accreditation-related applications by institutions until submission of the visit report by the AIC. The graph shows the number of yearly visits from 2015 until 2023 and handling of continuously increasing number of applications is a testimony of the efficiency and competence to the Council Secretariat.



Meetings and Other Engagements

Accreditation Standards Committee and General Council Meetings

The NCEAC ASC meets on regular basis primarily to evaluate the reports submitted by the AICs after accreditation visits. The GC focuses on increasing the stakeholder-ready graduates and, thus, approves after thorough deliberations the ASC-recommended changes in the policies related to curricula of computing programs, accreditation



processes, minimum admission criteria for admission to a computing program, accreditation fee structure, etc. The GC receives the reports of the accreditation decisions of the ASC for information. It also deliberates over any complaints on accreditation decisions by the ASC. During the reporting period of 2021-23, NCEAC held four General Council Meetings.

Curriculum Review Committee Meeting

NCEAC organized four Curriculum Review Committee (CRC) meetings to revise the curricula of



all computing programs. Prof Dr Syed Mansoor Sarwar, Chairperson NCEAC, Prof Dr Jamil Ahmad, Vice Chairperson, Prof Dr Jamil Sawar, Prof Dr Shoab A Khan, Prof Dr Zartash Afzal Uzmi, and a representative from PASHA were the committee members. The committee drafted the curricula for the computing degree programs

and Associate Degree Programs (ADPs). The draft curricula were presented to Chairman, HEC for further review, deliberations, and approval by the relevant HEC bodies and other stakeholders such as P@SHA, PSEB, etc. Mr Raza Chohan, Adviser (Academics, Curriculum & NAHE) at HEC played a pivotal role in the efficient processing the draft curricula through stakeholders and its publication. The Computing Curricula 2023 was approved and published by the HEC with the following programs:

1. Bachelor of Science in Computer Science
2. Bachelor of Science in Software Engineering
3. Bachelor of Science in Artificial Intelligence

4. Bachelor of Science in Data Science
5. Bachelor of Science in Cyber Security
6. Bachelor of Science in Bioinformatics
7. Bachelor of Science in Information Systems
8. Bachelor of Science in Multimedia and Gaming
9. Bachelor of Science in Information Technology
10. Bachelor of Science in Computer Engineering

NCEAC 6th & 7th Program Evaluators Regional Training Workshops

NCEAC organized the 6th Program Evaluators Regional Training Workshops in all provincial capitals and the AJK. About 40 participants from each region attended these workshops. The NCEAC Chairman personally attended most of these workshops.

1. The workshop for the Islamabad region was conducted by Prof Dr Shoab A Khan in Islamabad on February 28, 2022.
2. The workshop for the Punjab region was conducted by Prof. Dr Shafay Shamail in Lahore on March 7, 2022.
3. The workshop for the Sindh region was conducted by Prof. Dr Zubair A Shaikh in Karachi on March 21, 2022.
4. The workshop for the KPK region was conducted by Prof. Dr Jamil Ahmad in Peshawar on June 13, 2022.
5. The workshop for the Kashmir and Gilgit Baltistan region was held in Muzaffarabad, AJK, by Prof. Dr Shoab A. Khan on October 3, 2022.
6. The workshop for the Baluchistan region was conducted by Prof. Dr Zartash Afzal Uzmi in Quetta in October 2022.

The primary emphasis of trainings was on the following:

- To improve the relevant skills of NCEAC Program Evaluators (PEs) in undertaking accreditation inspection based on the criteria set by the council.
- To establish the credibility of accreditation process, system of accreditation, accreditation standards, accreditation criteria, guidelines and procedures for stakeholders as an effective tool for quality improvement.



- To exchange views and experiences on international best practices for accreditation of computing degree programs and their effectiveness in quality enhancement.

The training consisted of the following modules.

- Accreditation Model
- Accreditation Procedure
- Accreditation-General Framework
- Procedure for Seeking Accreditation of Computing Program (s)
- Accreditation Automation System (AAS) & Program Evaluators Panel
- Code of conduct for Accreditation Inspection Committee (AIC)/Program Evaluators
- Accreditation Guidelines
- Format/Structure of the AIC Report /Sample Templates
- Assessment Exercise and Interaction with Stakeholders
- International Best Practices of Accreditation

NCEAC organized 7th Program Evaluators Regional Training Workshops in Islamabad, Peshawar, Karachi, and Lahore. About 45 participants from each region attended these workshops.

1. The workshop for the KPK region was conducted by Prof. Dr. Muhammad Ali Maud and Prof. Dr. Jamil Ahmad in Peshawar on November 20, 2023.
2. The workshop for the Federal region was conducted by Prof. Dr. Muhammad Ali Maud and Prof. Dr. Jamil Ahmad in Islamabad on November 21, 2023.
3. The workshop for the Sindh region was conducted by Prof. Dr. Muhammad Ali Maud and Prof. Dr. Jamil Ahmad in Karachi on December 11, 2023.
4. The workshop for the Punjab region was conducted by Prof. Dr. Muhammad Ali Maud in Lahore on December 26, 2023.



New Developments and Future Plans

New Programs

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 curricula for the 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)

As stated earlier, in 2023, NCEAC-CRC revised the curricula and semester-wise plans for all existing computing degree programs and developed curricula for BS Multimedia and Gaming, BS Computer Engineering, and some the Associate Degree Programs (ADPs) in computing. The main purpose of these efforts was to summarize and synthesize the current state of curriculum guidelines for academic programs that grant bachelor's degrees in computing as well as offer the flexibility for the universities/DAIs while implementing these guidelines. The proposed curricula were approved and published by the HEC as "Computing Curricula 2023."

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 and 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, practitioners, and researchers of the relevant fields from public and private sector universities and the IT industry. The revision of curricula formed in year 2023 also included a few additional degree programs.

In order to impart quality education, meet local needs and international standards, NCEAC-CRC revised the curricula of computing discipline with unified framework/templates. It includes both existing domains, emerging domains, and Associate Degree Programs. It is hoped that this revision would serve the purpose of meeting our national, social and economic needs, and it would also

make it compatible with international educational standards. In February 2023, HEC approved and published the revised curricula for all computing degree programs under the purview of NCEAC.

OBE Based Education

NCEAC is planning to launch Outcome Based Education and Accreditation System in future. For that purpose NCEAC prepared the Accreditation Manual 2023 and also organized region wise training workshops for the faculty and institutes in 2023.

Seoul Accord Preparation

During the last two decades, Pakistan has seen tremendous growth in the higher education sector. Some Pakistani universities have been included in top 500 international universities in the general and subject rankings, and this upward trend continues. 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 who will be better suited for a progressive Pakistan in the future, it is 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 is imperative that we 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. This accord covers the tertiary undergraduate computing degree programs. 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 of those countries as IT professionals. NCEAC plans to be a signatory of the Seoul Accord, which will further facilitate in improving the quality of computing education in the country.

To achieve this goal, the council has already updated its Accreditation Manual in 2023 in line with the Seoul Accord requirements. The Committee regarding revision of NCEAC Manual was constituted in the 41st Accreditation Standard Committee meeting in July 19, 2023. Prof. Dr Muhammad Ali Maud, Professor Emeritus, UET, Lahore (Senior Member, NCEAC General Council) was the convener and Prof. Dr Jamil Ahmad, Vice Chairman, NCEAC was the member. The committee presented the revised manual in the 43rd NCEAC GC meeting on September 19, 2023. The GC approved the manual and appreciated the scholarly efforts of the sub-committee that drafted the manual. The GC specifically acknowledged the contributions made by Professor Dr. Muhammad Ali Maud in this regard.

NCEAC conducted regional training workshops for program evaluators and computing faculty of HEI's in Pakistan regarding the updated Manual. NCEAC will conduct an exercise to train the master trainers who will further train the relevant faculty and other stakeholders in the institutions in meeting the requirements of Seoul Accord.

Upcoming Measures in 2024

- Improving quality of computing graduates with input from graduates and industry
- Registration of graduates from non-accredited programs
- Region-wise training workshops on international practices of accreditation system for program evaluators
- Region-wise seminars regarding NCEAC criteria and standards and Outcome Based Education
- Accreditation inspection visits of non-accredited affiliated colleges
- Induction and training of new program evaluators
- Development of new database of all commuting programs offered at degree awarding institutes, sub-campuses, and affiliated colleges, and computing graduates in Pakistan
- Computing faculty training programs in core computing courses
- The new Accreditation Automation System based on revised process and forms will be put live in February 2024
- From August 31, 2024 onwards, the degrees of non-accredited computing programs will not be attested by HEC as per the decision of NCEAC General Council
- NCEAC will write to all public and private institutions of Pakistan to hire computing graduates from NCEAC-accredited programs
- Advertise Parent Alerts regarding accredited degree programs

Picture Gallery



NCEAC Curriculum Review Committee Meeting Chaired by Prof. Dr Syed Mansoor Sarwar August 21, 2021



6th Program Evaluators Training Workshop in Islamabad Feb 28, 2022



6th Program Evaluators Training Workshop in Karachi March 21, 2022



6th Program Evaluators Training Workshop in Peshawar June 13, 2022



6th Program Evaluators Training Workshop in Lahore March 7, 2022



6th Program Evaluators Training Workshop in Muzaffarabad, AJK Oct 3, 2022



6th Program Evaluators Training Workshop in Quetta Oct 22, 2022



36th Accreditation Standards Committee Meeting in Islamabad May 11, 2022



Chairman NCEAC and Vice Chairman NCEAC welcoming the Executive Director HEC to the 7th Program Evaluators Training Workshop in Islamabad Nov 21, 2023



7th Program Evaluators Training Workshop in Peshawar Nov 20, 2023