



## Annual Program Report (Postgraduate Degree)

<b>Program Name:</b>	Professional MSc in Cybersecurity
<b>Qualification Level:</b>	Master
<b>Department:</b>	Information Systems
<b>College:</b>	Computer Sciences and Information Systems
<b>Institution:</b>	Najran University
<b>Academic Year:</b>	2021 - 2022 (1443/1444AH)
<b>Main Location:</b>	Najran, Main campus
<b>Branches offering the Program:</b>	<ul style="list-style-type: none"> <li>• Male Campus</li> <li>• Female Campus</li> </ul>

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## A. Implementation of Previous Action Plan

Considering the recommendations of the previous year annual report, list the planned actions and their status.

Priorities for Improvement	Planned Actions	Responsibility of Action	Planned Completion Date	Level of Completion		If Not Completed	
				Completed	Not Completed	Reasons	Proposed Actions
1. To raise the English usage standard of students	First Semester of 2021-2022	Head of the Department / Instructors	End of Academic Year of 2021-2022	√			
2. Conduct a survey once a year on stakeholders' awareness ratings of the Mission Statement and Objectives.	First Semester of 2021-2022	Head of the Department / Head of Quality Assurance	End of Academic Year of 2021-2022	√			
3. Academic advising unit should guide the students to complete their courses as plan in their academic plan.	First Semester of 2021-2022	Academic advising	End of Academic Year of 2021-2022	√			
4. Request to hire more Associate Prof and full Prof.	First Semester of 2021-2022	Head of the Department	End of Academic Year of 2021-2022	√			

## B. Program Statistics

### 1. Students Statistics (in the year concerned)

No.	Item	Results
1	Number of students enrolled at all levels of the program	
2	Number of students who started the program	
3	Number of students who graduated	
4	Number of students who completed major tracks within the program (if applicable)	
	a.	
	b.	
	c.	
5	Number of students who completed an intermediate award specified as an early exit point (if any)	

### 2. Analysis of Program Statistics

(including strengths, areas for improvement, and priorities for improvement)

<b>Strengths :</b>
<b>Areas for Improvement:</b>
<b>Priorities for Improvement:</b>

## C. Program Learning Outcomes Assessment

### 1. Program Learning Outcomes Assessment Results.

#	Program Learning Outcomes	Assessment Methods (Direct and Indirect)	Performance Target	Results
<b>Knowledge and Understanding</b>				
K1				
K2				
K3				
K4				
K..				
<b>Skills</b>				
S1				
S2				
S3				
S4				
S..				
<b>Values</b>				
V1				
V2				
V3				
V4				
V..				
<b>Comments on the Program Learning Outcomes Assessment Results.</b>				

\* Include the results of measured learning outcomes during the year of the report according to the program plan for measuring learning outcomes

\*\* Attach a separate report on the program learning outcomes assessment results for male and female sections and for each branch (if any)

### 2. Analysis of Program Learning Outcomes Assessment

(including strengths, Areas for Improvement, and priorities for improvement)

<b>Strengths :</b>
<b>Areas for Improvement:</b>
<b>Priorities for Improvement:</b>

## D. Summary of Course Reports

### 1. Teaching of Planned Courses / Units

List the courses / units that were planned and not taught during the academic year, indicating the reasons and compensating actions.

Course	Units/Topics	Reasons	Compensating Actions

## 2. Courses with Variations

List courses with marked variations in results that are stated in the course reports, including: (completion rate, grade distribution, student results, etc.), and giving reasons for these variations and actions taken for improvement.

Course Name & Code	variation	Reasons for variation	Actions taken

## 3. Analysis of Course Reports' Results

(including strengths, Areas for Improvement:, and priorities for improvement)

<b>Strengths :</b>
<b>Areas for Improvement:</b>
<b>Priorities for Improvement:</b>

## E. Program Activities

### 1. Student Counseling and Support

Activities Implemented	Brief Description *
students' excuses	Each semester, the instructor of a course received students' request for a make-up exam and examine the required documents, which will then be sent to the HoD to discuss the requests with the department council.
Counseling services	Each faculty member post his/her office hours during which students can visit for receiving counseling and advising.
<b>Comment on Student Counseling and Support **</b>	
The 3rd semester 1444H: two requests for make-up exams were processed for the same student in the department council, date: 17-5-2023.	

\* including action time, number of participants, results and any other statistics.

\*\* including performance evaluation on these activities

### 2. Professional Development Activities for Faculty and Supporting Staff

Activities Implemented	Number of participants		Brief Description *
	Faculty	Supporting Staff	
Professional Guidance Forum on 6-6-2023	14	5	This seminar was conducted on 6-6-2023 about professional guidance
Professional academics and certificates on 6-6-2023		5	This seminar was conducted on 6-6-2023 about professional academics and obtaining guidance
Linkdan site and how to create an account and use it on 6-6-2023	14	5	This seminar was conducted on 6-6-2023 about linked in help
How to create a resume on 6-6-2023	14	5	This seminar was conducted on 6-6-2023 about how to make professional CV for job
How to write professional emails for Job on 6-6-2023	14	5	This seminar was conducted on 6-6-2023 about how to write an email for job

Activities Implemented	Number of participants		Brief Description *
	Faculty	Supporting Staff	
The personal interview and how to pass it successfully on 6-6-2023	14	5	This seminar was conducted on 6-6-2023 about how to answer in an interview for a job
Data Governance seminar	11	30	This workshop was conducted for STC Najran on 7/1/2022
Enterprise Architecture seminar	11	30	This workshop was conducted for STC Najran on 9/1/2022
Motherhoods program			This workshop was conducted for Mothers or Expected mothers in Najran on 1/5/2022
Computer Vision & Image Processing	10	207	This workshop was conducted for Najran community on 5/9/2022. And there were 207 participants.
Imperial College Business School Certificate Completion			This certificate was completed by one of the IS faculty on Digital Transformation Strategy at Imperial College London on 28/11/2022
R Analytics	9	30	This workshop was conducted for Najran University on 9/5/2022
Computer Vision & Image Processing	8	22	This workshop was conducted for Najran University on 09/2022
Application of the updated Delone and Mclean(IS) success method to investigate E-CRM effectiveness	12	114	This workshop was conducted for Undergraduate Najran University on 11/2022
<b>Comment on Professional Development Activities for Faculty and Other Supporting Staff **</b>			
None			

\* including action time, number of participants, results and any other statistics.

\*\* including performance evaluation on these activities

### 3. Scientific Research, Innovations and Inventions

#### a .Research Achievements (in the year concerned)

Scientific Production Source (Research Group/Research Chair/Individual Research/Research Project, etc.)	Number of Participants		Classification of Scientific Production (Research ,worksheets ,books , inventions, etc.)	Production Status (Published, accepted for publication, patented, etc.)
	Students	Teaching Staff		
Saleh Hamad Sajaan Almansour, Rahul Singh, Saleh Mabruk Hadrami Alyami, Neha Sharma, Mana Saleh Al Reshan, Sheifali Gupta, Mahdi Falah Mahdi Alyami, Asadullah Shaikh. A Convolution Neural Network Design for Knee Osteoarthritis Diagnosis Using X-ray Images. International Journal of Online and Biomedical Engineering (iJOE), 19(07), pp. 125–141. <a href="https://doi.org/10.3991/ijoe.v19i07.40161">https://doi.org/10.3991/ijoe.v19i07.40161</a> . Scopus Indexed, 2023. [PDF]	✓	✓	Research	Published
Fayaz Hassan, Jianguo Yu, Zafi Sherhan Syed, Nadeem Ahmed, Mana Saleh Al Reshan, and Asadullah Shaikh. Achieving model explainability for intrusion detection in VANETs with LIME. PeerJ Computer Science 9:e1440 <a href="https://doi.org/10.7717/peerj-cs.1440">https://doi.org/10.7717/peerj-cs.1440</a> . Thomson Reuters, Impact Factor, 3.061, 2023. [PDF]		✓	Research	Published
Swapandeep Kaur, Sheifali Gupta, Hani Alshahrani, Mana Saleh Al		✓	Research	Published

Scientific Production Source (Research Group/Research Chair/Individual Research/Research Project, etc.)	Number of Participants		Classification of Scientific Production (Research ,worksheets ,books , inventions, etc.)	Production Status (Published, accepted for publication, patented, etc.)
	Students	Teaching Staff		
Reshan, Sultan Alyami and Asadullah Shaikh. ResRandSVM: Hybrid Approach for Acute Lymphocytic Leukemia Classification in Blood Smear Images. Diagnostics 2023, 13(12), 2121; <a href="https://doi.org/10.3390/diagnostics13122121">https://doi.org/10.3390/diagnostics13122121</a> . Impact Factor: 3.992, 2023. [PDF]				
Imran Ihsan, Hameedur Rehman, Asadullah Shaikh, Adel Sulaiman, Khairan Rajab, and Adel Rajab. Improving In-Text Citation Reason Extraction and Classification using Supervised Machine Learning Techniques. Computer Speech and Language, Volume 82, July 2023, 101526. Impact Factor, 3.252, 2023 [PDF].		✓	Research	Published
Hamza Sohail, Mahmood ul Hassan, M.A. Elmagzoub, Adel Rajab, Khairan Rajab, Adeel Ahmed, Asadullah Shaikh, Abid Ali, Harun Jamil. BBSF: A Blockchain Based Secure Weather Forecasting Information Through Routing Protocol in Vanet. Sensors 2023, 23(11), 5259; <a href="https://doi.org/10.3390/s23115259">https://doi.org/10.3390/s23115259</a> . Impact Factor, 3.847, 2023. [PDF]		✓	Research	Published
Hani Alshahrani, Attiya Khan, Muhammad Rizwan, Mana Saleh Al Reshan, Adel Sulaiman, Asadullah Shaikh. Intrusion Detection Framework for Industrial Internet of Things using Software Defined Network. Sustainability 2023, 15(11), 9001; <a href="https://doi.org/10.3390/su15119001">https://doi.org/10.3390/su15119001</a> . Impact Factor, 3.889, 2023 [PDF].		✓	Research	Published
Wadhah Mohammed M. Aqlan, Ghassan Ahmed Ali, Khairan Rajab, Adel Rajab, Asadullah Shaikh, Fekry Olayah, Shehab Abdulhabib Saeed Alzaeemi, Kim Gaik Tay, Mohd Adib Omar and Ernest Mangantig. Thalassemia Screening by Sentiment Analysis on Social Media Platform Twitter. Computers, Materials & Continua 2023, 76(1), 665-68, <a href="https://doi.org/10.32604/cmc.2023.039228">https://doi.org/10.32604/cmc.2023.039228</a> . Impact Factor, 3.860, 2023. [PDF]		✓	Research	Published
Mana Saleh Al Reshan, Kanwarpartap Singh Gill, Vatsala Anand, Sheifali Gupta, Hani Alshahrani, Adel Sulaiman and Asadullah Shaikh. Detection of Pneumonia from Chest X-ray Images Utilizing MobileNet Model. Healthcare 2023, 11(11), 1561; <a href="https://doi.org/10.3390/healthcare11111561">https://doi.org/10.3390/healthcare11111561</a> .		✓	Research	Published

Scientific Production Source (Research Group/Research Chair/Individual Research/Research Project, etc.)	Number of Participants		Classification of Scientific Production (Research ,worksheets ,books , inventions, etc.)	Production Status (Published, accepted for publication, patented, etc.)
	Students	Teaching Staff		
11561. Impact Factor: 3.160, 2023. <a href="#">[PDF]</a>				
Adel Sulaiman, Vatsala Anand, Sheifali Gupta, Yousef Asiri, M.A.Elmagzoub, Mana Saleh Al Reshan, Asadullah Shaikh. Convolutional Neural Network Architecture for Segmentation of Lung diseases using Chest X-ray Images. Diagnostics 2023, 13(9), 1651; <a href="https://doi.org/10.3390/diagnostics13091651">https://doi.org/10.3390/diagnostics13091651</a> . Impact Factor: 3.992, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Hafiz Aamir Hafeez, M.A. Elmagzoub, Nurul Azma Binti Abdullah, Mana Saleh Al Reshan, Ghulam Gilanie4, Sultan Alyami, Mahmood ul Hassan and Asadullah Shaikh. A CNN-Model to Classify Low-grade and High-grade Glioma from MRI Images. IEEE Access, vol. 11, pp.46283 - 46296, 2023, doi: <a href="https://doi.org/10.1109/ACCESS.2023.3273487">10.1109/ACCESS.2023.3273487</a> . Impact Factor: 3.476, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Vatsala Anand, Sheifali Gupta, Deepali Gupta, Yonis Gulzar, Qin Xin, Sapna Juneja, Asadullah Shah, Asadullah Shaikh. Weighted Average Ensemble Deep Learning Model for Stratification of Brain Tumor in MRI Images Diagnostics 2023, 13(7), 1320; <a href="https://doi.org/10.3390/diagnostics13071320">https://doi.org/10.3390/diagnostics13071320</a> . Thomson Reuters, Impact Factor, 3.992, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Sadaf Waziry, Ahmad Bilal Wardak, Jawad Rasheed, Raed M. Shubair, Khairan Rajab, and Asadullah Shaikh. Performance Comparison of Machine Learning Driven Approaches for Classification of Complex Noises in Quick Response Code Images. Heliyon, Volume 0, Issue 0, e15108, 10.1016/j.heliyon.2023.e15108. Thomson Reuters, Impact Factor, 3.776, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Areej Fatemah Meghji, Naeem Ahmed Mahoto, Yousef Asiri, Hani Alshahrani, Adel Sulaiman and Asadullah Shaikh. Early Detection of Student Degree-level Academic performance using educational data mining. PeerJ Computer Science 9:e1294 <a href="https://doi.org/10.7717/peerj-cs.1294">https://doi.org/10.7717/peerj-cs.1294</a> . Thomson Reuters, Impact Factor, 3.061, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Neelam Dahiya, Sartajvir Singh, Sheifali Gupta, Adel Rajab, Mohammed Hamdi, Adel Sulaiman, M.A. Elmagzoub, Asadullah Shaikh. Detection of Multitemporal		✓	Research	Published



Scientific Production Source (Research Group/Research Chair/Individual Research/Research Project, etc.)	Number of Participants		Classification of Scientific Production (Research ,worksheets ,books , inventions, etc.)	Production Status (Published, accepted for publication, patented, etc.)
	Students	Teaching Staff		
Changes with Artificial Neural Network-based Change Detection Algorithm using Hyperspectral Dataset. Remote Sensing, Remote Sensing. Thomson Reuters, vol. 15(5), 1329; <a href="https://doi.org/10.3390/rs15051326">https://doi.org/10.3390/rs15051326</a> . Thomson Reuters, Impact Factor, 5.349, 2023. <a href="#">[PDF]</a>				
Muhammad Awais Rajput, Sultan AlYami, Qazi Arbab Ahmed, Hani Alshahrani, Yousef Asiri, and Asadullah Shaikh. Improved Learning-based Design Space Exploration for Approximate Instance Generation. IEEE Access, vol. 11, pp. 18291 - 18299, 2023, doi: <a href="https://doi.org/10.1109/ACCESS.2023.3247303">10.1109/ACCESS.2023.3247303</a> . Impact Factor: 3.367, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Qurat-ul-ain Mastoi, Asadullah Shaikh, Mana Saleh Al Reshan Adel Sulaiman, M.A. Elmagzoub, and Sultan AlYami. A Fully Automatic Model For Premature Ventricular Heartbeat Arrhythmia Classification using Internet of Medical Things. Biomedical Signal Processing and Control, vol, 83, pp. 104697, 2023. ISI Thomson Reuters, Impact Factor, 5.076, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Ansar Munir Shah, Mohammed Aljubayri, Muhammad Faheem Khan, Jarallah Alqahtani, Mahmood ul Hassan, Adel Sulaiman and Asadullah Shaikh. ILSM: Incorporated Lightweight Security Model for Improving QOS in WSN. Computer Systems Science and Engineering, vol. 46, no.2, pp. 2471-2488. <a href="https://doi.org/10.32604/csse.2023.034951">https://doi.org/10.32604/csse.2023.034951</a> . ISI Thomson Reuters, Impact Factor, 4.397, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Amirita Dewani, Mohsin Ali Memon, Sania Bhatti, Adel Sulaiman, Mohammed Hamdi, Hani Alshahrani, Abdullah Alghamdi, Asadullah Shaikh. Detection of Cyberbullying Patterns in Low-Resource Colloquial Roman Urdu Microtext using Natural Language Processing, Machine Learning and Ensemble Techniques. Applied Sciences. vol. 13(4), 2062; <a href="https://doi.org/10.3390/app13042062">https://doi.org/10.3390/app13042062</a> . ISI Thomson Reuters, Impact Factor, 2.838, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Hani Alshahrani, Noman Islam, Darakhshan Syed, Adel Adel Sulaiman, Mana Saleh Al Reshan, Khairan Rajab, Asadullah Shaikh, Jaweed Shuja-Uddin. Sustainability in Blockchain: A Systematic Literature Review on Scalability and Power Consumption Issues. Energies.		✓	Research	Published

Scientific Production Source (Research Group/Research Chair/Individual Research/Research Project, etc.)	Number of Participants		Classification of Scientific Production (Research ,worksheets ,books , inventions, etc.)	Production Status (Published, accepted for publication, patented, etc.)
	Students	Teaching Staff		
vol. 16(3), 1510; <a href="https://doi.org/10.3390/en16031510">https://doi.org/10.3390/en16031510</a> . ISI Thomson Reuters, Impact Factor, 3.252, 2023. [PDF]				
Mana Saleh Al Reshan, Darakhshan Syed, Noman Islam, Asadullah Shaikh, Mohammed Hamdi, M. A. Elmagzoub, Ghulam Muhammad, Kashif Hussain Talpur. A Fast Converging and Globally Optimized Approach for Load Balancing in Cloud Computing. IEEE Access, vol. 11, pp. 11390 - 11404, 2023, doi: <a href="https://doi.org/10.1109/ACCESS.2023.3241279">10.1109/ACCESS.2023.3241279</a> . Impact Factor: 3.367, 2023 [PDF]		✓	Research	Published
Saifullah Memon, Jingyu Wang, Adnan Ahmed, Adel Rajab, Mana Saleh Al Reshan, Asadullah Shaikh, and Muhammad Awais Rajput. Enhanced Probabilistic Route Stability (EPRS) protocol for healthcare applications of WBAN. IEEE Access, vol. 11, pp. 2169-3536, 2023, Impact Factor: 3.367. [PDF]		✓	Research	Published
Arslan Iftikhar, M.A. Elmagzoub, Ansar Munir, Hamad Abosag Al Salem, Mahmood ul Hassan, Jarallah Alqahtani and Asadullah Shaikh. Efficient Energy and Delay Reduction Model for Wireless Sensor Networks. Computer Systems Science and Engineering, vol. 46, no.1, pp. 1153-1168. ISI Thomson Reuters, Impact Factor, 4.397, 2023. [PDF]		✓	Research	Published
Neha Sharma, Sheifali Gupta, Deepika Koundal, Sultan Alyami, Hani Alshahrani, Yousef Asiri and Asadullah Shaikh. U-Net Model with Transfer Learning Model as a Backbone for Segmentation of Gastrointestinal Tract. Bioengineering 2023, 10(1), 119, 2023. <a href="https://doi.org/10.3390/bioengineering10010119">https://doi.org/10.3390/bioengineering10010119</a> . Impact Factor: 5.046. [PDF]		✓	Research	Published
Muhammad Adil, Hani Alshahrani, Adel Rajab, Asadullah Shaikh, Houbing Song, and Ahmed Farouk. QoS Review : Smart Sensing in Wake of COVID-19, Current Trends and Specifications with Future Research Directions. IEEE Sensors Journal, vol. 23, Issue: 2, pp. 865-876, 2023. Impact Factor 4.325, 2023. [PDF]		✓	Research	Published
Mudita Uppal, Deepali Gupta, Amena Mahmoud, M. A. Elmagzoub, Adel Sulaiman, Mana Saleh Al Reshan, Asadullah Shaikh, and Sapna Juneja. Fault Prediction Recommender Model for IoT enabled Sensors based Workplace.		✓	Research	Published

Scientific Production Source (Research Group/Research Chair/Individual Research/Research Project, etc.)	Number of Participants		Classification of Scientific Production (Research ,worksheets ,books , inventions, etc.)	Production Status (Published, accepted for publication, patented, etc.)
	Students	Teaching Staff		
Sustainability, vol. 15(2), no.1060, pp. 1-21, 2023. <a href="https://doi.org/10.3390/su15021060">https://doi.org/10.3390/su15021060</a> . ISI Thomson Reuters, Impact Factor, 3.889, 2023. <a href="#">[PDF]</a>				
Dharambir Kashyap, Riya Sharma, Neelam Goel, Harpal S. Buttar, Vivek Kumar Garg, Deeksha Pal, Khairan Rajab and Asadullah Shaikh. Coding roles of long non-coding RNAs in breast cancer: Emerging molecular diagnostic biomarkers and potential therapeutic targets with special reference to chemotherapy resistance. Frontiers in Genetics. vol. 13:993687, pp. 1-22, 2023. . <a href="https://doi.org/10.3389/fgene.2022.993687">https://doi.org/10.3389/fgene.2022.993687</a> ISI. Thomson Reuters, Impact Factor, 4.772, 2023. <a href="#">[PDF]</a> Naeem Ahmed Mahoto, Asadullah Shaikh, Adel Sulaiman, Mana Saleh Al Reshan, Adel Rajab and Khairan Rajab. A Machine Learning Based Data Modeling for Medical Diagnosis. Biomedical Signal Processing and Control, vol, 81, pp. 104481, 2023. ISI Thomson Reuters, Impact Factor, 5.076, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Muhammad Shahzeb Ali, Ali Alqahtani, Ansar Munir Shah, Adel Rajab, Mahmood ul Hassan, Asadullah Shaikh, Khairan Rajab and Basit Shahzad. Improved-Equalized Cluster Head Election Routing Protocol for Wireless Sensor Networks. Computer Systems Science and Engineering, vol. 44, no.1, pp. 845-858, doi: 10.32604/csse.2023.025449. ISI Thomson Reuters, Impact Factor, 1.486, 2023. <a href="#">[PDF]</a>		✓	Research	Published
Muhammad Mujtaba Asad, Aqsa Naz, Asadullah Shaikh, Mesfer Alrizq, Muhammad Akram, and Abdullah Alghamdi. Investigating the Impact of IoT - Based Smart Laboratories on Students' Academic Performance in Higher Education. Universal Access in the Information Society, pp. 1-15. <a href="https://doi.org/10.1007/s10209-022-00944-1">https://doi.org/10.1007/s10209-022-00944-1</a> . ISI Thomson Reuters, Impact Factor, 2.629, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Khawaja Hassan Waseem, Hammad Mushtaq, Fazeel Abid , Adnan M. Abu-Mahfouz, Asadullah Shaikh, Mehmet Turan and Jawad Rasheed. Forecasting of Air Quality Using an Optimized Recurrent Neural Network. Processes, vol. 10, no.10:2117, pp. 1-21, 2022. <a href="https://doi.org/10.3390/su141811667">https://doi.org/10.3390/su141811667</a> . ISI Thomson Reuters, Impact Factor, 3.352, 2022. <a href="#">[PDF]</a>	✓	✓	Research	Published

Scientific Production Source (Research Group/Research Chair/Individual Research/Research Project, etc.)	Number of Participants		Classification of Scientific Production (Research ,worksheets ,books , inventions, etc.)	Production Status (Published, accepted for publication, patented, etc.)
	Students	Teaching Staff		
Adel Sulaiman, Hameedur Rahman, Numan Ali, Asadullah Shaikh, Muhammad Akram, Wei Hong Lim. An Augmented Reality PQRS based Method to Improve Self-Learning Skills for Preschool Autistic Children. Evolving Systems, pp. 1-14. <a href="https://doi-org.sdl.idm.oclc.org/10.1007/s12530-022-09472-y">https://doi-org.sdl.idm.oclc.org/10.1007/s12530-022-09472-y</a> . ISI Thomson Reuters, Impact Factor, 2.347, 2022. <a href="#">[PDF]</a> <a href="#">[Link]</a>		✓	Research	Published
Shailendra Pratap Singh, Wattana Viriyasitavat, Sapna Juneja, Hani Alshahrani, Asadullah Shaikh, Gaurav Dhiman, Aman Singh, Amandeep Kaur. Dual Adaption Based Evolutionary Algorithm for Optimized the Smart Healthcare Communication Service of the Internet of Things in Smart City. Physical Communication, vol, 55, pp. 101893, 2022. <a href="https://doi.org/10.1016/j.phycom.2022.101893">https://doi.org/10.1016/j.phycom.2022.101893</a> . ISI Thomson Reuters, Impact Factor, 2.379, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Mudita Uppal, Deepali Gupta, Sapna Juneja, Adel Sulaiman, Khairan Rajab, Adel Rajab, M. A. Elmagzoub, Asadullah Shaikh. Cloud-Based Fault Prediction for Real-Time Monitoring of Sensor Data in Hospital Environment Using Machine Learning. Sustainability, vol. 14, no.18:8596, pp. 1-20, 2022. <a href="https://doi.org/10.3390/su141811667">https://doi.org/10.3390/su141811667</a> . ISI Thomson Reuters, Impact Factor, 3.889, 2022. <a href="#">[PDF]</a>	✓	✓	Research	Published
Hira Noman, Naeem Ahmed Mahoto, Sania Bhatti, Hamad Ali Abosag, Mana Saleh Al Reshan and Asadullah Shaikh. An Exploratory Study of Software Sustainability at Early Stages of Software Development. Sustainability, vol. 14, no.13:8596, pp. 1-23, 2022. <a href="https://doi.org/10.3390/su14148596">https://doi.org/10.3390/su14148596</a> . ISI Thomson Reuters, Impact Factor, 3.889, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Farhat Ullah, Xin Chen, Khairan Rajab, Mana Saleh Al Reshan, Asadullah Shaikh, Muhammad Abul Hassan, Muhammad Rizwan, and Monika Davidekova. An Efficient Machine Learning Model Based on Improved Features Selections for Early and Accurate Heart Disease Predication. Computational Intelligence and Neuroscience, vol. 2022, Article ID 1906466, 12 pages, <a href="https://doi.org/10.1155/2022/1906466">https://doi.org/10.1155/2022/1906466</a> . Impact Factor 3.120, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Muhammad Saquib Nazir, Usman Ghani Khan, Aqsa Mohiyuddin, Mana Saleh Al Reshan, Asadullah Shaikh, Muhammad Rizwan, and Monika	✓	✓	Research	Published

Scientific Production Source (Research Group/Research Chair/Individual Research/Research Project, etc.)	Number of Participants		Classification of Scientific Production (Research ,worksheets ,books , inventions, etc.)	Production Status (Published, accepted for publication, patented, etc.)
	Students	Teaching Staff		
Davidekova. A Novel CNN-Inception-V4-Based Hybrid Approach for Classification of Breast Cancer in Mammogram Images. Wireless Communications and Mobile Computing, vol. 2022, Article ID 5089078, 10 pages, <a href="https://doi.org/10.1155/2022/5089078">https://doi.org/10.1155/2022/5089078</a> . Impact Factor 2.146, 2022. <a href="#">[PDF]</a>				
Shehnaila Zardari, Sana Alam, Hamad Abosag Al Salem, Mana Saleh Al Reshan, Asadullah Shaikh, Aneeq Fayyaz Karim Malik, Muhammad Masood ur Rehman, Haralambos Mouratidis. A Comprehensive Bibliometric Assessment on Software Testing (2016–2021). Electronics, vol. 11, no. 13:1984, pp. 1-26, 2022. <a href="https://doi.org/10.3390/electronics11131984">https://doi.org/10.3390/electronics11131984</a> . ISI Thomson Reuters, Impact Factor, 2.397, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Ashu Taneja, Nitin Saluja, Neeti Taneja, Ali Alqahtani, M. A.Elmagzoub, Asadullah Shaikh, Deepika Koundal. Power Optimization Model for Energy Sustainability in 6G Wireless Networks. Sustainability, vol. 14, no.12:7310, pp. 1-15, 2022. <a href="https://doi.org/10.3390/su14127310">https://doi.org/10.3390/su14127310</a> . ISI Thomson Reuters, Impact Factor, 3.251, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Muhammad Nawaz Khan, Haseeb Ur Rahman, Muhammad Zahid Khan, Gulzar Mehmood, Adel Sulaiman, Asadullah Shaikh and Abdulmajeed Alqhatani. Energy-Efficient Dynamic and Adaptive State-based Scheduling (EDASS) Scheme for Wireless Sensor Networks. IEEE Sensors Journal, vol. 22, no.12, pp. 12386-12403, doi 10.1109/JSEN.2022.3174050. Impact Factor 3.301, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Swapandeep Kaur, Shefali Gupta, Swati Singh, Vinh Truong Hoang, Sultan Almakdi, Turki Alelyani, Asadullah Shaikh. Transfer Learning Based Automatic Hurricane Damage Detection using Satellite Images. Electronics, vol. 11, no. 9:1448, pp. 1-15, 2022. <a href="https://doi.org/10.3390/electronics11091448">https://doi.org/10.3390/electronics11091448</a> . ISI Thomson Reuters, Impact Factor, 2.397, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Aisha Mashraqi, Hanan Halawani, Turki Alelyani, Mutaib Mashraqi, Mohammed Makkawi, Sultan Alasmari, Asadullah Shaikh, and Ahmad Alshehri. Prediction Model of Adverse Effects on Liver Functions of COVID-19 ICU Patients. Journal of Healthcare Engineering, vol. 2022, Article ID 4584965, 11 pages, <a href="https://doi.org/">https://doi.org/</a>		✓	Research	Published

Scientific Production Source (Research Group/Research Chair/Individual Research/Research Project, etc.)	Number of Participants		Classification of Scientific Production (Research ,worksheets ,books , inventions, etc.)	Production Status (Published, accepted for publication, patented, etc.)
	Students	Teaching Staff		
10.1155/2022/4584965. Impact Factor 2.682, 2022. <a href="#">[PDF]</a>				
Iqra Abid, Sultan Almakdi, Hameedur Rahman, Ahmed Almulihi, Ali Alqahtani, Khairan Rajab, Abdulmajeed Alqhatani, and Asadullah Shaikh. A Convolutional Neural Network for Skin Lesion Segmentation Using Double U-Net Architecture. Intelligent Automation & Soft Computing, vol. 33, no.3, pp. 1407-1421, doi: 10.32604/iasc.2022.023753. ISI Thomson Reuters, Impact Factor, 1.647, 2022 <a href="#">[PDF]</a>	✓	✓	Research	Published
Mohammad Tabrez Quasim, Adel Sulaiman, Asadullah Shaikh, Mohammed Younus. Blockchain in Churn Prediction based Telecommunication System on Climatic Weather Application. Sustainable Computing: Informatics and Systems, Volume 35, 2022, 100705, ISSN 2210-5379, <a href="https://doi.org/10.1016/j.suscom.2022.100705">https://doi.org/10.1016/j.suscom.2022.100705</a> . ISI Thomson Reuters, Impact Factor, 4.028, 2022. <a href="#">[PDF]</a>		✓	Research	Published
Khairan Rajab, Mohammed Hamdi, Mana Saleh Al Reshan, Yousef Asiri, Asadullah Shaikh and Adel Rajab. Implementation of Virtual Training: on The Example of the a Faculty of Computer Science during COVID-19 for Sustainable Development in Engineering Education. Electronics, vol. 11, no. 5:694, pp, 1-20, 2022. <a href="https://doi.org/10.3390/electronics11050694">https://doi.org/10.3390/electronics11050694</a> . ISI Thomson Reuters, Impact Factor, 2.397, 2022. <a href="#">[PDF]</a>		✓	Research	Published
<b>Total</b>	46			

\* Attach a research production statement of the faculty and students in the program including basic data such as (researcher's name ,research title ,publishing entity ,publishing date, etc.)

\*\* In the case of multiple scientific production ,the program lists the numbers for each classification individually (Example in individual research :if the total number is (10) in the case of production (6) published ,and (4) acceptable for publication, etc.)

### Comment on Research Achievements

### b .Theses(approved during in the year concerned)

Thesis Title	Researcher's Name	Supervisor's Name	Grade

### Comment on Theses

#### 4. Analysis of Program Activities

(including strengths, Areas for Improvement:, and priorities for improvement)

<b>Strengths :</b>
<b>Areas for Improvement:</b>
<b>Priorities for Improvement:</b>

### F. Program Evaluation

#### 1. Evaluation of Courses

Course Code	Course Title	Student Evaluation ( Yes-No)	Other Evaluations (Specify)	Developmental Recommendations

#### 2. Evaluation of Scientific Supervision

##### a. Students Evaluation of Scientific Supervision

<b>Evaluation Date :</b>	<b>Number of Participants:</b>
<b>Students Feedback</b>	<b>Program Response</b>
<b>Strengths:</b> <ul style="list-style-type: none"><li> </li><li> </li></ul>	
<b>Areas for Improvement::</b> <ul style="list-style-type: none"><li> </li><li> </li></ul>	
<b>Suggestions for improvement:</b> <ul style="list-style-type: none"><li> </li><li> </li></ul>	

##### b. Other Evaluation of Scientific Supervision

<b>Evaluation method :</b>	<b>Date:</b>	<b>Number of Participants :</b>
<b>Summary of Evaluator(s) Review</b>	<b>Program Response</b>	
<b>Strengths:</b> <ul style="list-style-type: none"><li> </li><li> </li></ul>		
<b>Points for Improvements::</b> <ul style="list-style-type: none"><li> </li><li> </li></ul>		
<b>Suggestions for improvement</b> <ul style="list-style-type: none"><li> </li><li> </li></ul>		

### 3. Students Evaluation of Program Quality

<b>Evaluation Date :</b>	<b>Number of Participants:</b>
<b>Students Feedback</b>	<b>Program Response</b>
<b>Strengths:</b> <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>	
<b>Areas for Improvement::</b> <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>	
<b>Suggestions for improvement:</b> <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>	

\* Attach report on the students evaluation of program quality

### 4. Other Evaluations (if any)

(e.g. Evaluations by independent reviewer, program advisory committee, and stakeholders (e.g., faculty members, alumni, and employers))

<b>Evaluation method :</b>	<b>Date:</b>	<b>Number of Participants :</b>
<b>Summary of Evaluator(s) Review</b>		<b>Program Response</b>
<b>Strengths:</b> <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>		
<b>Points for Improvements::</b> <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>		
<b>Suggestions for improvement</b> <ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>		

\* Attach independent reviewer's report and stakeholders' survey reports ( if any)

### 5. Key Performance Indicators (KPIs)

List the results of the program key performance indicators (including the key performance indicators required by the National Center for Academic Accreditation and evaluation)

No	KPI	Target Benchmark	Actual Value	Internal Benchmark	Analysis	New Target Benchmark
1						
2						
3						
4						
5						
6						
<b>Comments on the Program KPIs and Benchmarks Results :</b>						

### 6. Analysis of Program Evaluation

(including strengths, Areas for Improvement:, and priorities for improvement)

<b>Strengths :</b>
<b>Areas for Improvement:</b>



**Priorities for Improvement:**

## G. Difficulties and Challenges Faced Program Management

Difficulties and Challenges	Implications on the Program	Actions Taken
The number of teaching staff in the department is low especially in female section	The teaching and administration of female section was difficult	Request to hire more faculty members and assigning some courses to male faculties
Labs resources are not technically updated. They need to be upgraded	Affect teaching of practical courses	raising the issue at the college level
Transformation from two semester plan to three semesters pan	Repositions of courses under specific credit hours rules for each semester	The curriculum unit works promptly to address this challenge and mitigate the effects in a professional way and smoothly solve this challenge efficiently
Moving classrooms and labs to another colleges building	Affect the teaching strategies	Organize workshops to explain to students the new rules and raise request to the college level to address the lab concerns
Weak participation and lack of response from faculty members in quality works such as course files	Delay in task submission	Raising the issue at the department level and sending frequent email to emphasize the important of this procedure

\*Internal and external difficulties and challenges

## H. Program Improvement Plan

No.	Priorities for Improvement	Actions	Action Responsibility	Date		Achievement Indicators	Target Benchmark
				Start	End		
1	Organizing scientific, cultural, and research lectures of Cybersecurity	Encouraging faculty members and students to participate	Research Unit	New Academic year	End of the academic year	Document that shows the conducted seminars and lectures.	4 seminars and lectures
2	Prepare Documents for NCAAA for Master accreditation	Prepare the NCAAA implementation plan	NCAAA standard committees' members	New Academic year	Based on each standards time	A report from every standards committee showing the progress of action plan	1 plan
3	Improving teaching materials and making use of appropriate resources using technology	Faculty should update their skills and knowledge with the trend.	Coordinator and instructors	New Academic year	End of the academic year	A report of student evaluation and surveys	1 report
4	Availability of resources E	Program	Head of the	New	End of	A report of	1 report

	Cybersecurity like reference materials, provide materials like books, CDs etc. to students.	should provide and guide students to library and electronic resources	Department /Librarian/ College	Academic year	the academic year	availability of resources	
5							
6							

### I. Report Approving Authority

<b>Council / Committee</b>	
<b>Reference No.</b>	
<b>Date</b>	

### J. Attachments :

- A separate cohort analysis report for male and female sections and for each branch (if any)
- A report on the program learning outcomes assessment results for male and female sections and for each branch (if any)
- A research production statement of the faculty and students in the program including basic data such as (researcher's name, research title, publishing entity, publishing date, etc.)
- A report on the students evaluation of program quality
- Independent reviewer's report and other survey reports (if any)