Study Guide

for the programme **B. Ed. in Technical Education**
with the specialized areas

Mechanical Engineering

Electrical Engineering

Civil Engineering

Information Technology

Preface

This study guide gives a description of the procedures, objectives and contents of the Study Programme "B.Ed. in Technical Education". It describes how this programme is organized and what tasks and assignments you have to fulfill in order to succeed and get the final grade.

You are enrolled in a new and innovative study programme for TVET teachers, which has been developed in a cooperation of three universities. The objectives of the programme are in accordance with the National Vocational Qualification Framework (NVQF) developed by the National Vocational & Technical Training Commission (NAVTTC), Pakistan.

This study programme requires strong discipline and tenacity throughout the entire study period. Sometimes you might feel as been left on your own and sometimes you might ask yourself if a certain theory or findings of the scientific research is relevant in practice. However, decades of experience with adult learners in different countries, has proved the validity of the sentence "Nothing is more practical than a good theory". Quite often students tell how their way of looking at well-known things has changed after their studies and how this has activated their power of change.

Students should use this study programme to get in touch with new forms of thinking relating to pedagogical and management issues. Only if you can change your own way of thinking, you are able to change and improve situations.

The participating Universities, the University of the Punjab, the Technical University Kaiserslautern, and the Virtual University of Pakistan have endeavored to include not only theories but also practical instruments and hands on experience into the study programme. You will get a powerful tool box which enables you to reorganize your daily work as educator and teacher in TVET.

And finally, we are interested to get your feedback, how you succeed with this. Communication is essential for education. In this respect you have all options to get in contact with lecturers, with the project team and finally with the academic tutors, and all of them will guide you throughout the programme. In particular the tutors can serve as first contact in case of questions and clarifications, please make use of this offer. We wish you good luck in this study programme!

Table of Contents

1. The concept of this study programme

This programme combines some innovative approaches:

First, it is a blended learning programme, which combines face-to-face phases on the university campus with alternating self-learning phases, and both are supported by academic tutors through the internet. You will be guided through our support structure that enables you for ongoing consultation: lecturers by sending them e-mails, the academic tutors, the project staff; all are linked via the virtual learning environment.

Second, it is an international joint programme of three universities: the University of the Punjab, the Virtual University of Pakistan and the Technical University of Kaiserslautern, Germany.

Third, the content of the programme, its learning objectives and the expected output are focusing on the learning and teaching skills of TVET teachers. In this respect "self-learning" is as important (or more important) as listening to a lecture in the lecture hall. The slogan "less teaching and more learning" gives us a hint on the main idea of this programme.

Fourth, an important part of the study programme is two practical phases, namely the internship at a company to taste the world of work and the teaching practice at a TVET institution.

With this study guide we give you a road map which will guide you through the study programme.

2. Organization and procedure of the programme
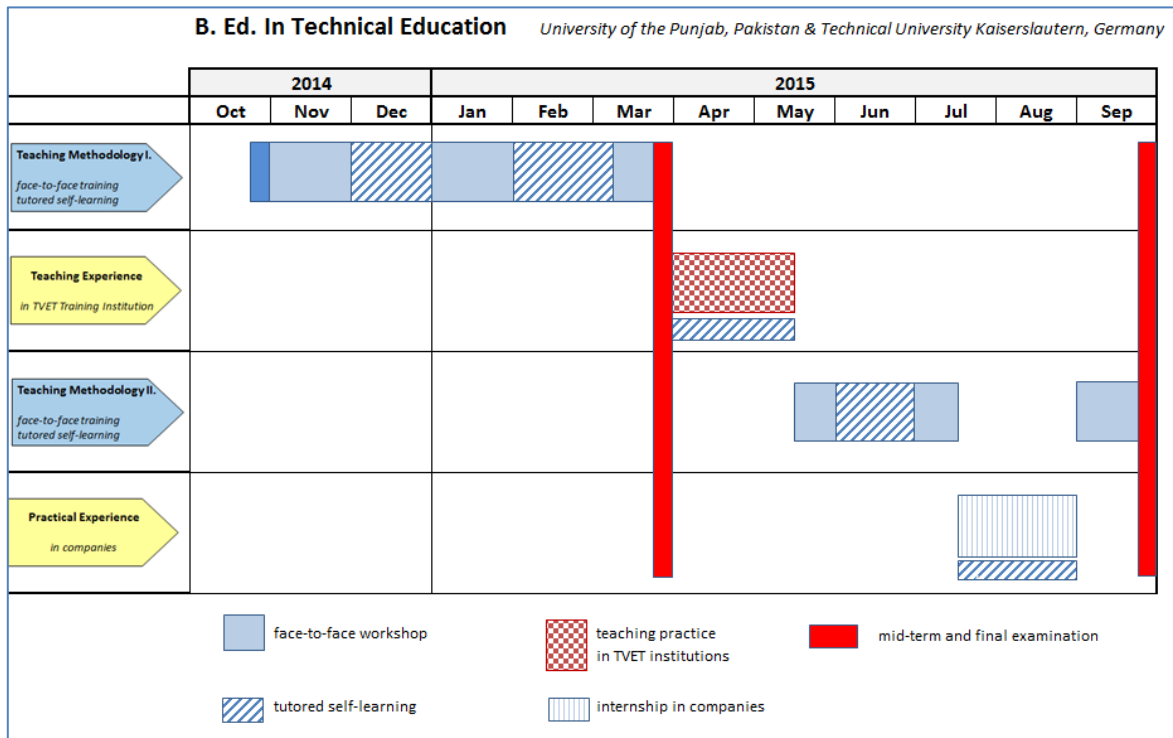
The Study Programme consists of four elements:

- the core subjects
- the specialized areas
- teaching practice in TVET institutions
- internship in companies.

In total there are 8 core subjects and 4 specialized areas. In addition to these "theoretical" subjects there are two practical phases:

- teaching practice in TVET institutions
- internship in companies

The practical phases have duration of 6 weeks each. The purpose of this exposure is to provide firsthand experience in working in a company and practical teaching in a TVET institution. Both practical phases will be guided and supported by academic tutors.

B. Ed. In Technical Education *University of the Punjab, Pakistan & Technical University Kaiserslautern, Germany*

Legend:
- face-to-face workshop
- teaching practice in TVET institutions
- mid-term and final examination
- tutored self-learning
- internship in companies

The following table provides an overview of the contents and credit points of the programme.

Subjects of the study programme "B.Ed. in Technical Education"

No.	Subjects according to IER standards	Hours face-to-face	Hours self-learning	Total Hours	Credit-points
Core Subjects					
1	Foundations (Philosophical/ Social/ Economic) of Technology Education	30	36	66	3
2	Educational Psychology	30	36	66	3
3	Curriculum & Instruction (incl. teaching strategies)	30	36	66	3
4	Research Methods in Technology Education	30	36	72	3
5	Assessment & Evaluation in Technology Education	30	36	66	3
6	Computer Application in Technology Education	30	36	66	3
7	Organization and management of Technology Education	30	36	66	3
8	Learning Strategies	60	72	132	3
9	Teaching Practice	240	30	270	1.5
10	Internship in Companies	240	30	270	1.5
	Total	750	384	1140	27
Areas of Specialisation					
Information Technology + individual project		120	72+120	312	6+3
Civil Engineering + individual project		120	72+120	312	6+3
Mechanical Engineering + individual project		120	72+120	312	6+3
Electrical Engineering + individual project		120	72+120	312	6+3
	Total (for each area)	120	192	312	36

3. Face-to-face learning and self-learning – what makes the difference?

Both modes form integral part of the study programme

3.1 Face-to-face learning

Everybody knows and has experience in face-to-face learning when attending a lecture or participating in a seminar or workshop. This "normal" way of studying is also applied in this programme. Every core subject and every specialized area has a number of hours face-to-face learning. In these phases the lecturers are responsible for delivering the contents in the well-known way using Power Point slides, presentations, hand-outs and verbal communication. They are assisted and supported by academic tutors to enhance the learning process and to guarantee that individual and group work is included to intensify the interaction and engagement of students.

3.2 Self-learning

Every student is used to learn by himself while repeating the topics of a lecture, preparing for assignments and examinations etc., so what makes the difference?

The self-learning phases in this study programme form an integral part; they are structured, guided by tutors and also assessed. Especially for these self-learning phases selected study material is available which is especially designed and developed for self-learning (see chapter 7).

To ensure that you really put effort in reading and comprehension of these texts, you are asked to do several assignments, called "activities" and "tasks". These activities and tasks are clearly marked in the study material. It might be also the case that special activities and/or tasks will be given by lecturers or tutors. In completing the activities and tasks you prove that you have carefully read and understood the material.

The way of assessing your comprehension is the same in all cases: first you have to read the study text, then you have to answer the questions of the "activity" or "task" and then you have to submit your answers to the academic tutors using the virtual learning environment (see chapter 3.3) within a certain time frame. Tasks submitted after the deadline cannot be taken into consideration and will not contribute to your performance evaluation.

The main difference between the usual self-learning and self-learning within this study programme is that you will not be left alone. During self-learning phases students are connected to tutors, lecturers and fellow students through the communication and learning platform (Virtual Learning Environment) which is described in chapter 3.3. In this respect, the self-learning is all the time guided and facilitated by academic tutors.

During self-learning phases you have to fulfill certain tasks and you will undertake certain activities which are described in the "Study Materials for self-learning" or be given by the tutors. For the submission of these tasks and assignments the given deadlines apply (see chapter 5.1).

The difference between „activities" and „tasks" is explained in the table below.

What is an <u>activity</u> and what is a <u>task</u>?

Activity	Task
Activities are aiming to ensure that the student has read and understood the previous (sub-) chapters and that he/she is able to use the given information to solve a problem or to answer questions. Additional sources of information (internet, books) might be necessary. Activities must be sent within a given timeframe to the lecturer/tutor and feedback will be given via e-mail. Activities are **voluntary**. The completion of an activity by the student might require up to 1 hour.	Tasks are aiming to ensure that the student has read and understood the study material and that he/she is able to use the given information to solve a comprehensive problem. Additional sources of information (internet, books) might be necessary. Tasks must be sent within a given timeframe to the lecturer/tutor and feedback will be given via e-mail. Tasks (assignments) are **mandatory**, will be marked and contribute to the study results. The completion of a task by the student might require up to 4 hours.

3.3 Using the Virtual Learning Environment

Every student has access to our virtual learning environment (learning management system) with his/her username (student ID) and password, developed by Virtual University of Pakistan: **http://els.vu.edu.pk/**

This environment (we also could say "online seminar") is an integral part of the study programme and every student has to access this environment constantly during the whole study programme. All relevant and additional materials and all communication

between tutors and students as well as communication between lecturers and students, will be downloadable.

The usage of the online-seminar is mandatory for students and the active participation in online discussions within every subject is a requirement for success.

To assure that every student can access the internet and the virtual learning environment throughout the entire duration of the study programme, the Virtual University of Pakistan is providing access to more than 200 "virtual campuses" all over Pakistan with computer and internet access. A list of virtual campuses can be found at http://www.vu.edu.pk/.

The online-seminar is organized according to the subjects of the study programme.
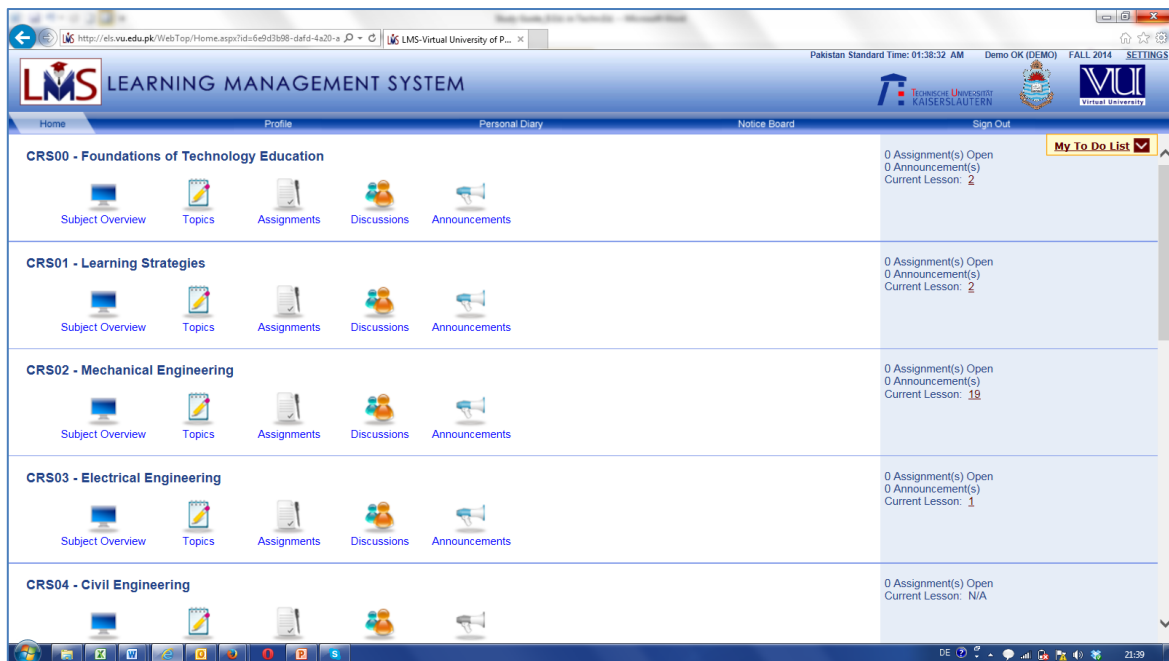
4. The academic calendar

The B. Ed. in Technical Education is an innovative programme, differing in many aspects from other study programmes. This applies for the blended learning approach as well as for the sequence of subjects and the composition of the face-to-face sessions in combination with self-learning phases.

Regarding the on-campus phases we usually have one full day (6 hours) for one subject. This means that the lecturer in cooperation with the tutors can cover the topics in a deeper and more comprehensive way as if he/she would have only two hours lecturing in one week and spread over the semester.

One subject a day over 6 hour also means that this cannot be only lecturing for 6 hours but a combination of lecturing, guided individual work, group work, presentations and discussions.

The following tables give an overview of the academic year of the study programme, however, please be also prepared that changes can happen during the study programme.

Abbreviation	Meaning
OW	Orientation Week
LS	Learning Strategies
FTE	Fundation of Technical Education
EP	Educational Psychology
C & I	Curriculum & Instruction
CA	Computer Applications in Technical Education
A & E	Assessment and Evaluation
OM	Organisation and Management in Technical Education
RM	Research Methods
SK	„Skills" (Areas of Specialisation)

2014 | **2015**

Training calendar (October 2014 – September 2015)

Day	Oktober	November	Dezember	January	February	March	April	May	June	July	August	September
1	We	Sa	Mo	Th	Su	Su	We	Fr	Mo	We RM	Sa	Tu
2	Th	Su	Tu	Fr	Mo	Mo	Th	Sa	Tu	Th RM	Su	We
3	Fr	Mo LS	We	Sa	Tu	Tu	Fr	Su	We	Fr SK	Mo	Th
4	Sa	Tu LS	Th	Su	We	We	Sa	Mo	Th	Th	Tu	Fr
5	Su	We LS	Fr	Mo FTE	Th	Th	Su	Tu	Fr	Fr	We	Sa
6	Mo	Th FTE	Sa	Tu EP	Fr	Fr	Mo	We	Sa	Mo SK	Th	Su
7	Tu	Fr FTE	Su	We LS	Sa	Sa	Tu	Th	Su	Tu SK	Fr	Mo
8	We	Sa	Mo	Th SK	Su	Su	We	Fr	Mo	We SK	Sa	Tu
9	Th	Su	Tu	Fr SK	Mo	Mo C&I	Th	Sa	Tu	Th SK	Su	We
10	Fr	Mo LS	We	Sa	Tu	Tu CA	Fr	Su	We	Fr SK	Mo	Th
11	Sa	Tu LS	Th	Su	We	We CA	Sa	Mo	Th	Sa	Tu	Fr
12	Su	We FTE	Fr	Mo C&I	Th	Th A&E	Su	Tu	Fr	Su	We	Sa
13	Mo	Th FTE	Sa	Tu C&I	Fr	Fr A&E	Mo	We	Sa	Mo SK	Th	Su
14	Tu	Fr EP	Su	We C&I	Sa	Sa	Tu	Th	Su	Tu	Fr	Mo
15	We	Sa	Mo	Th SK	Su	Su	We	Fr	Mo	We	Sa	Tu
16	Th	Su	Tu	Fr SK	Mo	Mo	Th	Sa	Tu	Th	Su	We
17	Fr	Mo LS	We	Sa	Tu	Tu	Fr	Su	We	Fr	Mo	Th
18	Sa	Tu LS	Th	Su	We	We	Sa	Mo OM	Th	Sa	Tu	Fr
19	Su	We EP	Fr	Mo CA	Th	Th	Su	Tu OM	Fr	Su	We	Sa
20	Mo	Th EP	Sa	Tu CA	Fr	Fr	Mo	We SK	Sa	Mo	Th	Su
21	Tu	Fr EP	Su	We CA	Sa	Sa	Tu	Th SK	Su	Tu	Fr	Mo
22	We	Sa	Mo	Th C&I	Su	Su	We	Fr SK	Mo	We	Sa	Tu Exam
23	Th	Su	Tu	Fr SK	Mo	Mo Exam	Th	Sa	Tu	Th	Su	We
24	Fr	Mo LS	We	Sa	Tu	Tu	Fr	Su	We	Fr	Mo	Th
25	Sa	Tu LS	Th	Su	We	We	Sa	Mo OM	Th	Sa	Tu	Fr
26	Su	We SK	Fr	Mo SK	Th	Th	Su	Tu OM	Fr	Su	We	Sa
27	Mo OW	Th SK	Sa	Tu A&E	Fr	Fr	Mo	We SK	Sa	Mo	Th	Su
28	Tu OW	Fr SK	Su	We A&E	Sa	Sa	Tu	Th RM	Su	Tu	Fr	Mo
29	We OW	Sa	Mo	Th A&E		Su	We	Fr RM	Mo	We	Sa	Tu
30	Th OW	Su	Tu	Fr SK		Mo	Th	Sa	Tu	Th	Su	We
31	Fr OW		We	Sa		Tu		Su		Fr	Mo	

Phase annotations:

- Oktober 2014: OW
- Nov. 3 – Nov 25: Self – Learning phase (LS)
- Dec. 1 – 31: Self – Learning phase
- Feb. 1 – March 8: Self – Learning phase
- March 16: face-2-face Preparation for Exam
- April 1 – May 17: Teaching in Vocational Training Institutions
- June 1 – 28: Self – Learning phase
- July 14: organisational issues
- July 20 – August 30: Internship in companies
- September 2: face-2-face finish & presentation of individual project
- September 14: face-2-face Preparation for Exam

5. Benchmarks – what are you expected to achieve?

In this study programme there are two sets of benchmarks:

- The academic achievements
- Requirements to qualify for the scholarship

5.1   Academic achievements

The academic requirements are in line with the rules and regulations of the I.E.R (Institute of Education and Research) of the University of the Punjab (see the Prospectus 2014 of the I.E.R). The requirements say that the student must fulfill the condition of having attended 75 % lectures or class meetings and having submitted the respective number of tests and assignments.

Due to the fact that a significant proportion of the study programme is covered by self-learning without attendance in class, the active participation of students will be shown by the timely delivery of assignments (tasks).

In every subject a number of tasks/assignments have to be processed during self-learning phases:

Subject	No. of assignments (tasks)
Learning Strategies	4
Foundations of Techn. Education	2
Educational Psychology	2
Specialised Areas	2
Curriculum & Instruction	2
Computer Applications	2
Assessment & Evaluation	2
Organisational Management	2
Research Methods	2
total	**20**

Schedule of assignments and deadlines

Subject	Start face-to-face	Start self-learning	End self-learning	No. of assignments	Deadlines
Learning Strategies	5.11.14	1.12.14	4.1.15	4	a) 7.12.14 b) 14.12.14 c) 21.12.14 d) 4.1.15
Foundations of Technical Education	6.11.14	1.12.14	4.1.15	2	a) 9.12.14 b) 4.1.15
Educational Psychology	14.11.14	1.12.14	4.1.15	2	a) 11.12.14 b) 4.1.15
Specialized Areas	26.11.14	1.12.14	4.1.15	1	a) 16.12.14
		1.2.15	8.3.15	1	a) 8.2.15
Curriculum & Instruction	12.1.15	1.2.15	8.3.15	2	a) 10.2.15 b) 1.3.15
Computer Applications	19.1.15	1.2.15	8.3.15	2	a) 12.2.15 b) 4.3.15
Assessment & Evaluation	27.1.15	1.2.15	8.3.15	2	a) 22.2.15 b) 8.3.15
Organisational Management	18.5.15	1.6.15	28.6.15	2	a) 7.6.15 b) 28.6.15
Research Methods	28.5.15	1.6.15	28.6.15	2	a) 14.6.15 b) 28.6.15
				20	

17 out of these 20 assignments (equal to 85%) have to be delivered until the respective deadline/submission date and marked as „passed". If one assignment is marked as „failed", the student has two weeks to repeat this assignment.

In addition to the assignments, students
- have to present an „**individual project**" as part of their studies in the „Specialized Area" (Mechanical Engineering, Electrical Engineering, Civil Engineering and Information Technology),
- participate in **teaching practice** in TVET institutions
- participate in the **internship programme** at a company
- and of course pass the examinations at the end of each semester.

5.2 Requirements to access the scholarship

The B.Ed. in Technical Education is equipped with a very attractive stipend system to allow students from all Provinces to participate in this Study programme. In order to access the stipend each student has to comply with the following requirements:

	Achievements	Minimum requirements	Proof
A	Face-to-face phases	Attendance in class: 85 %	Signed attendance register
B	Self-learning phases	17 of 20 tasks must be submitted (85%)	Written acceptance of submitted assignments by the relevant lecturer
		Active participation in every subject (minimum two substantial postings in discussion fora)	Confirmation by academic tutor
C	Teaching practice in TVET institutions		Confirmation letter by hosting TVET institution
D	Participation in the internship programme at a company		Confirmation letter by hosting company
E	Individual Project in the "Specialised Area"	Presentation of project	Confirmation by respective lecturer

These requirements and conditions are part of the "Rules and regulations for the bursary scheme for B.Ed. in Technical Education" which has to be signed by each student.

6. Assessment system

The evaluation system, the regulations of the mid-term and final examination and the requirements for the award of degree are according to the criteria of the I.E.R (see the Prospectus 2014 of the I.E.R).

7. Subjects and study materials for self-learning phases

Subject	Study Materials for self-learning
Foundations of Technology Education	• Foundations of Education (Allama Iqbal Open University) • Foundations of Technology Education (Dr. Rafaqat Ali Akbar)
Learning Strategies	• Development of Teaching and Learning Processes (Prof. Dr. Markus Hoeffer-Mehlmer) • Change of Learning Culture (Prof. Dr. Ingeborg Schuessler) • Curriculum and instruction (Allama Iqbal Open Univ.) • Modern Training and Teaching Methods (Uwe Wieckenberg)
Educational Psychology	• Educational Psychology (Woolfolk, A.) • Educational Psychology (Allama Iqbal Open University)
Curriculum & Instruction (incl. teaching strategies)	• Teaching Strategies (Allama Iqbal Open University) • How to Teach without Instructing? (Prof. Dr. Rolf Arnold) • Session Management and Training Evaluation (Uwe Wieckenberg) • Curriculum and Instruction (Allama Iqbal Open University)
Research Methods in Technology Education	• Research Methods in Technical Education (Dr. Muhammad Shahid Farooq)
Assessment & Evaluation in Technology Education	• Educational Assessment and Evaluation (Ruediger Wolf) • Educational Assessment and Evaluation (Dr. Muhammad Abiodullah/Mr. Muhammad Riaz)
Computer Application in Technology Education	• Computer Application in Technology Education (Dr. Shafiqur Rahman)
Organization and Management of Techno-logy Education	• Techniques and Methods of Cooperation and Communication (Prof. Dr. Henning Pätzold/Dr. Alexander Wick) • Emotional Competence as Core Competence of School Leadership (Prof. Dr. Rolf Arnold) • Organisational Management of Technology Education (Dr. Abdul Qayyum Ch.)
Electrical Engineering	• Textbook of Electrical Technology (Theraja, B.L.) • Electrical Engineering (Mr. Abir Naqvi)
Mechanical Engineering	• Workshop Processes, Practices and Materials (Black, B.J.) • Mechanical Engineering (Mr. Sajid Ali)
Civil Engineering	• The Civil Engineering Handbook (Chen, W.F.)
Information Technology	• Teachers Discovering Computers. Integrating Technology and Digital Media in the Classroom (Shelly, G.B.) • Information Technology (Mr. M. Shahzad Mughal)

8.   Lecturers and tutors per subject

Subject	Lecturers	Tutors
Foundations of Technology Education	Dr. Rafaqat	1. Tanveer Iqbal 2. Amna Saeed
Learning Strategies	Dr. Tariq	1. Nisar Abid 2. Sayyeda Batool 3. Nighat Ara Shams
Curriculum & Instruction	Dr. Tariq	1. Nazakat Khan 2. Almas Shoaib 3. Maryam Mubarak
Educational Psychology	Dr. Tahseen	1. Abdul Qayyum 2. Tooba Saleem
Computer Application in Technology Education	Dr. Shafiqur Rehman	1. Sehar Rashid 2. Asad Ali Manzoor 3. Syed Zohaib Hassan
Reseach Methods in Technology Education	Dr. Muhammad Farooq	1. Saima Mushtaq 2. Aqila Rafique 3. Ryma Najam Gillani
Assessment & Evaluation in Technology Education	Dr. Mohammed Abiodullah/Mr. Riaz	1. Amna Yousaf 2. Afshan Naseem
Organisation and Management of Technology Education	Dr. Abdul Qayyum	1. Muhammad Atif Khalil 2. Naveed Tufail
Information Technology	Mr. Shahzad	1. Asad Ali Manzoor 2. Syed Zohaib Hassan
Electrical Engineering	nn	1. Naveed Tufail 2. Muhammad Atif Khalil
Mechanical Engineering	Mr. Sajid	1. Nadeem Shahzad 2. Amjad Mehmood
Civil Engineering	Mr. Tahir Mahmood	1. Rana Zahid Omer Khan 2. n.n.

9.   Contacts

University of the Punjab, Institute of Education and Research (I.E.R)	Dr. Mumtaz Akther e-mail: director.ier@pu.edu.pk
University of the Punjab, Coordinator of academic tutors	Ms. Tanveer Iqbal e-mail: tanveer_242@hotmail.com
Technical University Kaiserslautern, Germany	Mr. Uwe Wieckenberg Institut fuer Bildungstransfer e-mail: info@bildungstransfer.de
Virtual University of Pakistan	Mr. Ehsen Puri e-mail: director-ict@vu.edu.pk

Academic tutors

Subject	Name	E-Mail address
Foundations of Technology Education	• Tanveer Iqbal • Amna Saeed	• tanveer_242@hotmail.com • Amnanadeem86@gmail.com
Learning Strategies	• Nisar Abid • Sayyeda Batool • Nighat Ara Shams	• Nisar_abid_88@hotmail.com • qadoom_26@hotmail.com
Curriculum & Instruction	• Nazakat Khan • Almas Shoaib • Maryam Mubarak	• luckyniza@yahoo.com • Aromamalik86@gmail.com • Mars.libra@yahoo.com
Educational Psychology	• Abdul Qayyum • Tooba Saleem	• Abdulqayyum.ier@gmail.com • Tooba_malik90@hotmail.com
Computer Application in Technology Education	• Sehar Rashid • Asad Ali Manzoor • Syed Zohaib Hassan	• Sehar_rashid12@yahoo.com • Aam_4645@yahoo.com • Zhassan14@gmail.com
Reseach Methods in Technology Education	• Saima Mushtaq • Aqila Rafique • Ryma Najam Gillani	• Saima_7j@yahoo.com • aqilarafiq@yahoo.com • rymanajam@yahoo.com
Assessment & Evaluation in Technology Education	• Amna Yousaf • Afshan Naseem	• Amnayousaf94@yahoo.com • Afshan.pu@gmail.com
Organisation & Management of Techn. Education	• Muhammad Atif Khalil • Naveed Tufail	• Ati.scholar@gmail.com • Navid.ch@hotmail.com
Information Technology	• Asad Ali Manzoor • Syed Zohaib Hassan	• Aam_4645@yahoo.com • Zhassan14@gmail.com
Electrical Engineering	• Naveed Tufail • Muhammad Atif Khalil	• Navid.ch@hotmail.com • Ati.scholar@gmail.com
Mechanical Engineering	• Nadeem Shahzad • Amjad Mehmood	• niceformanite@yahoo.com
Civil Engineering	• Rana Zahid Omer Khan	• Greatcr1105@gmail.com

Personal notes