

# Criterion - 6

Governance, Leadership and Management

NAAC-SSR (2<sup>nd</sup> Cycle )



**ETERNAL UNIVERSITY**

BARU SAHIB, SIRMOUR-173101

HIMACHAL PRADESH

# 6.5.3(3)

## ICT for Teaching-Learning



**ETERNAL UNIVERSITY**

BARU SAHIB, SIRMOUR-173101  
HIMACHAL PRADESH

# ETERNAL UNIVERSITY

(ESTABLISHED UNDER HIMACHAL PRADESH GOVERNMENT ACT NO. 3 of 2009)

## BARU SAHIB HIMACHAL PRADESH



WORLD PEACE THROUGH VALUE BASED EDUCATION

# A PORTRAIT

**ETERNAL UNIVERSITY:**  
**A PORTRAIT**



## **ETERNAL UNIVERSITY : CURTAIN RAISER**

The State of Himachal Pradesh with its unique geography, clean environment and tempered climate has a potential of becoming the Switzerland of India with its specialized industrial base and trained work force. Given the current policy on education, the State also holds a great promise to become the favoured destination for a wide range of institutions of higher learning.

With fast emerging technology as well as traditional industries, the State is experiencing fast growth in job market. Even though specialized institutions of higher learning (both existing as well as planned) will serve the fast emerging job markets in those specific areas, the need for a broadly trained labour force in the state will remain unfulfilled to a significant extent. Apart from meeting the domestic trained manpower requirements, the State should capitalize on its potential to be a supplier of high quality manpower with in the country as well as in the international context. It is, therefore, concluded that there is a dire need for a broad- based Multi discipline Institute of Higher Learning in the state of Himachal Pradesh which could specifically serve the rural and backward area of the State, and also serve the ends of generating quality manpower for national and international markets.

With the fast growing number of high/higher school graduates in Himachal Pradesh, there was an urgent need for additional institutes of higher learning to provide for these students opportunities of higher education.

Because Himachal Pradesh University at that time was the only Multi Faculty University in the State which imparted high standard of academic besides this specialised Universities for Horticulture, Forestry, Agriculture, Animal Sciences and a private university for Information Technology. The existing infrastructure, both in government and private sector was inadequate to meet the total need of the State in multi- discipline higher education. State of Himachal Pradesh with such a fast growing student population needed several multi faculty institutions of higher learning. Therefore, to be a leader in education the State of Himachal Pradesh enacted “The Himachal Pradesh Private University Act, inviting Private sector spencer’s to establish institutions of higher learning. The Kalgidhar Trust (the parent body of Eternal University) in responses established Eternal University with multiple academic units to offer more than 125 academic programs; and a significant number of these have been focusing on improving the lot of women, farmers, and the minorities

**Mission: Service to humanity through world peace based on value based education.**

**Objectives:**

- Reasonable stewardship of the environment and its resources.
- Suitable development in the State of Himachal Pradesh and India.
- Linkage Learning and Research to the needs and life of the people of Himachal Pradesh and India.
- Justice to the minorities, and other weaker sections of the society, especially to women and the rural poor.
- Holistic development of the human person in, with, and through the community for leadership instilled by high moral values.
- National unity and Communal harmony.
- International Fellowship and Universal Brotherhood of man based on Guru Nanak's philosophy to achieve permanent Peace in the World.
- In all the above, the University will help young and old without coercion or compulsion to deepen their commitment to a life of selfless service to the community.

Students enrolled in the academic programs are exposed to a diverse and wide range of technical and non- technical education and training, which will enable them to develop intellectual and training skills in their respective fields. The University has been simultaneously providing career counselling and guidance by keeping the students informed about the potential job opportunities and helps them in making prudent decisions regarding their future careers. It is maintaining and promoting close linkage and active contact with potential employers, both in National and Multi-national Corporations by involving their executives and faculties, to interact with students through lectures, seminars, symposia and class room participation. Eternal University also strives to prepare its students to take up the leadership in education, science, engineering, medicine, health care politics and community development.

Eternal University is a world class Multi- facility institution located in rural and backward area of the State of Himachal Pradesh (Baru Sahib, Distt. Sirmour), where there are no such higher education facilities. Academic collaborative arrangements have been worked out with a number of foreign Universities including Johns Hopkins University, Columbia University, University of Verginia, Wayne State University and with National Institution like IIT Hamirpur in the fields of Engineering, Teachers Training, Nursing and other pera- medical specialities, Public Health, and Business Administration toward ensuring international acceptance of the student turn out and ingraining into the academic processes the best practice and State of the art innovations in the processes. Memorandum of understandings has been signed for Akal College of Engineering & Technology with Wayne State University, Detroit, Michigan, U.S.A, NIIT Hamripur whereas with Drexel University, Philadelphia, Pennsylvania, USA for nursing and such arrangements for other specialities are in pipeline.

Twenty first century expertise and technology have been introduced at Eternal University through visiting faculty from abroad. Major courses in different faculties have been developed in collaboration with these resource persons. No effort has been spared towards building academic standards of Eternal University as good as (if no better than) institutions of high repute around the world. Exchange of students and mutual transfer of course credits mechanism would also be established between Eternal University and its partners abroad. This will encourage children of several million Non- Resident Indians settled abroad to come back and get high quality education at highly competitive costs. This will generate (in a way) a reverse migration of the talent, benefiting both Himachal Pradesh and India.

Eternal university because of its location has been serving primarily the rural and backward area of the state and also become a nodal point for economic growth of the area. It is planned to carry out research and impart teaching and training in multi-discipline areas of technical and non- technical fields, especially focused towards uplift of rural masses with emphasis on the plight of women and minorities.

## **PEEPING INTO PAST : A JOURNEY**

The great visionary of 20th century (Sant Attar Singh Ji) had a vision that modern scientific education alone will not serve the humanity well, until and unless it is amalgamated with Braham Vidya (Spiritual Education). The graduates of this unique education system will not only be outstanding in academics, but also will have high moral values (i.e. they will have love for humanity, compassion for the weak and the underdog, and sense of selfless service for the community). These graduates will work towards establishing permanent peace in the world. They will act as Ambassadors of Peace wherever they live, work and raise their families.

With this vision in mind, Sant Attar Singh Ji sent his devotee; Principal Teja Singh Ji ((M.A., LL.B) abroad in 1906, to get the best possible modern education available at that time. Principal Teja Singh went abroad and first studied at Cambridge University (U.K) and then at the world famous Teachers College, Columbia University (USA) and finally went to Harvard University, Boston, USA where he completed his M.A. degree.

On his return, Sant Attar Singh Ji gave Principal Teja Singh a "good grounding" in Braham Vidya and trained him to carry forward his mission of creating special breed of Akal Scholars with high moral values. Sant Attar Singh Ji also directed Principal Teja Singh to find a "Tapo Bhumi" in Himalayan mountains, where Rishis, Munis and saints had done Tapasya (meditation) in the past and gave him (Principal Teja Singh) the visual description of the place, resembling "BARU SAHIB". On finding this place (now called Baru Sahib) Sant Teja Singh Ji established The Kalgidhar Trust in 1956 to carry out the mission of Sant Attar Singh Ji.

Sant Teja Singh Ji also established a small place of worship at Baru Village and performed ardas to the almighty God (Waheguru) that an Institution of higher learning "Braham Vidya" may be granted here (as vision and wishes of Sant Attar Singh Ji). Thus, conceptual and spiritual foundation of Eternal University was laid at Baru Sahib, that day.

Before leaving this mortal world, Sant Teja Singh Ji, designated Shri Iqbal Singh (Baba ji) (Retired Director of Agriculture from Himachal Pradesh and present President of The Kalgidhar Trust) to carry forward the Mission. He started the AKALACADEMY at Baru Sahib (a prelude to Eternal University) in 1986 with 5 students, which has now grown to a formidable strength of approximately 1500 students and 200 of them hail from 16 foreign countries - with 100 students from USA alone. It is a 10+2 Residential School.

Akal Academy at Baru Sahib also has 70 sister Akal Academies spread over five States (i.e Himachal Pradesh, Punjab, Haryana, Rajasthan and Uttar Pradesh). All these academies are affiliated to the Central Board of Secondary Education (CBSE). The total number of students in these Akal Academies are now around 45,000 and 40% of these students are girls. Approximately 20% of the total student body is studying totally free of cost. These students are either orphans or belonging to poor and under-privileged rural families. All these Academies are located in rural areas. These academies have established an outstanding academic standard. Additional 130 such academies are also planned for the next three years, again in the rural areas with estimated future enrollment of more than 1,50,000 students.

The Kalgidhar Trust runs 200-bed Akal Charity Hospital at Baru Sahib. It also manages an orphanage, a senior-citizens' home, a widow home and a homeless women's home. All of these charity organizations are located at Baru Sahib and run without incurring any cost to the residents. The Kalgidhar Trust is also engaged in several other welfare projects for women empowerment and vocational training to children in the rural areas.

On July 3, 2006, Shri Iqbal Singh (President of The Kalgidhar Trust) performed ardas to Waheguru for granting the establishment of Eternal University at Baru Sahib, which is considered equivalent to laying the foundation stone in the worldly sense. This event commemorated the 100th anniversary of opening the first school for girls at village Mastuana (district Sangrur) in 1906 by Sant Attar Singh Ji, 50th anniversary of establishing The Kalgidhar Trust at Baru Sahib in 1956 by Sant Teja Singh Ji, and 20th Anniversary of the opening of first Akal Academy at Baru Sahib in 1986 by Shri Iqbal Singh (Baba ji). This, in a nutshell, is the historical development of the "Educational Mission" of Sant Attar Singh Ji, which spans over a century.

The network of 70 Akal Academies along with Eternal University, now in operation under the mission of creating permanent peace in the world through a unique system of education, has established itself (in a short period of 20 years) as an outstanding "High School Network", which has become a brand in the country with high academic standards, producing exemplary students and global citizens with a vision of "Universal Brotherhood of Mankind".

The Kalgidhar Trust is a complete non-profit organization and Eternal University is run as a non-profit organization as well.

The Eternal University is a God's Creation for imparting Value Based Education. It will produce outstanding graduates, postgraduates and doctorates who will have high moral values and love for humanity and compassion for needy and a sense of selfless service for the society. These graduates wherever they live will act as outstanding messengers of peace and good global citizens.



## **PRESENT STATUS : LEGAL JOURNEY**

Established under Himachal Pradesh Private University (Establishment and Regulation) Act No 12 of 2006.

And

Himachal Pradesh Ordinance No. 4 of 2008 “The Eternal University” (Establishment and Regulation) Ordinance, 2008

And

Eternal University (Establishment and Regulation) Bill No. 20 of 2008 and Act No. 3 of 2009

And

Eternal University (Establishment and Regulation) Amendment Bill No. 29 of 2010 and Act No. 17 of 2011.

And

UGC Public Notice on Private Universities dated 20<sup>th</sup> May, 2011 “The expert committee is of the opinion that Eternal University, Baru Sahib by the Kalgidhar Trust established under Himachal Pradesh University, Act No. 3 Of 2009 is a suitable case for recognition as it meets the criteria out-lined in UGC regulations 2003 and therefore, the Committee recommends the recognition of this University by UGC be granted.”

And

AICTE list of New plus existing institutions approved for Academic year 2001-12 region: NWRO at serial No. 14.

And

Indian Nursing Council, Kotla Road, Tample Lane, New Delhi, Certificate No. 18-13/4223-INC, Resolution No. 138/02/AUG/2008 date 14-Oct-2008.

# **HUMANISTIC APPROACH : FEE CONCESSION TO MERITORIOUS STUDENTS**

The following fee concession given to the students at the time of admission

First position in CBSE or in any

State level (+2) board examination - Full Fee Concession and Free Lodging and Boarding

The following fee concession will be given to the students at the time of admission on the basis of their aggregate marks in PCM

95% 100%	:	100% Tuition fee
90% to 94%	:	90% Tuition fee
80% to 89%	:	80% Tuition fee
70% to 79%	:	60% Tuition fee
65% to 69%	:	50% Tuition Fee

## **Fee Structure :**

1. Tuition fee	Rs 55,000/- Annual
2. Academic Charges	Rs 17,000/- Annual
3. Hostel Rent	Rs 18,000/- Annual

Note: Laundry, Medical, Uniform or any other facility availed will be charged as per actuals. Mess charges as per actual.

## PILLARS : OFFICERS OF UNIVERSITY

Sr. No	Designation	Name of the officer
1.	Chancellor	Baba Iqbal Singh Ji Director ( Rtd.) Department of Agriculture , H.P.
2.	Vice Chancellor	<b><u>Dr. Manmohan Singh Atwal,</u></b> M.Sc. (Hons.) (Punjab),M.S. (Ohio State), Ph.D. (Illinois), Executive MBA (Columbia), M.P.H. (Johns Hopkins), PDF (UC-Berkley),PDF (Johns Hopkins), PDF (Columbia).
3.	Registrar	Dr. Davinder Singh M.B.B.S (Delhi), M.D. (Delhi)
4.	Dean Faculty of Health Sciences	Dr. Neelam kaur, MBBS, M.S. (Punjab)
5.	Professor Incharge Examination/ Dean Faculty of Engineering	Dr. I. S. Hudiara B.E. (Punjab) M. E. (London), Ph.D.(Bradford) P.D.F. (Surrey) M.B.A. Finance, F.I.E.T.E., F.I.E.
6.	Chief Finance Officer	S. Balbir Singh, C.A.
7.	Director of Research	Dr. K.S. Saini Ph.D(Sydney), PDF (Harvard)
8.	Dean of Student Welfare	Prof. V.K. Khanna M.Com (Pbi.)
9.	Dean of Post Graduate Studies	Dr. H. S. Dhaliwal, M.Sc. (PAU), Ph.D. (California- River Side)
10.	Dean Faculty of Arts & Sciences	Dr. N.K. Ralhan, M.Sc., Ph.D. (Punjab), PDF (Louisiana State)
11.	Dean of Library and Information System	Dr. Ajit Singh B.A. (Hons), M.A, M. Lib. Sc, (Punjab), D.C.O, P.G.D.D.E, (IGNOU) Ph.D. (Punjabi)

# **ETERNAL UNIVERSITY COLLEGES & SCHOOLS**

The University is spread over 450 Acres of land. Approximately 11ac square meter area has been constructed. Eleven colleges in the first phase of its development have been established. These are.

1. Akal College of Engineering & Technology
2. Akal College of Nursing
3. Akal College of Arts & Sciences
4. Akal School of Economics.
5. Akal College of Divine Music & Spiritualism
6. Akal School of Post Graduate Studies
7. Akal College of Naturopathy and Herbal Medicine
8. Akal School of Physics and Nano Technology
9. Akal School of Chemistry
10. Akal School of Public Health
11. Akal school of Business Administration

## **New Proposed Schools:**

1. Akal School of Psychology and Counseling
2. Akal School of Biotechnology
3. Akal School of Renewable Energy
4. Akal School of Mathematics and Statistics
5. Akal School of Library and Information System
6. Akal School of Food Technology and Nutrition

The Eternal University will offer Academic programmes and a significant number of these will focus on improving the lot of women, farmers and other under privileged people of Himachal Pradesh and neighbouring states.

The Eternal University has been established with a Mission to serve the Humanity.

# **AKAL COLLEGE OF ENGINEERING AND TECHNOLOGY**

## **Degree to be awarded : B.Tech (ECE & CSE)**

The Akal College of Engineering & Technology was established in 2007 by the Kalgidhar Trust. The college aims at providing value Based Latest Scientific and Technical Education for achieving the highest level of professional competency to the students as per demand of modern industries that makes their placement anywhere in the world easy. The college also strives to inculcate disciplined living, honesty, integrity, high moral character and hard work so that these students may become good human beings and assert to the nation. The Akal College of Engineering & Technology is committed to produce Technocrats who have balanced personalities with high character and disciplined life.

**Eligibility Criteria: 10+2 with 60% marks and should have appeared in AIEEE.**



# **AKAL COLLEGE OF NURSING (ACN)**

## **Degree to be awarded: B.Sc. (Nursing).**

### **OBJECTIVES**

The Akal College of Nursing strives to achieve:

- a) Academic Excellence: To provide value-based latest scientific education and other life skills for achieving the highest level of professional competence as per the demands of modern health care delivery systems so as to make the placements of our students anywhere in the world, a smooth process.
- b) Communication Skills: To ensure courteous yet fearless and effective communication.
- c) High Moral Values: To inculcate the qualities of disciplined living, honesty, integrity, high moral character, hard work and dedication so that these students become outstanding nurses and global citizens with nerves of steel and a compassionate heart. To mould the thinking of the young students along spiritual lines so that the dreams of Universal Brotherhood and peace in the world, as enunciated by Guru Nanak Dev Ji Maharaj , are realized through their education in this valley of divine peace.

These are in consonance with the overall philosophy of the ETERNAL University and the founding fathers of the Kalgidhar Trust, Baru Sahib.

### **MISSION**

The College of nursing has its mission to train and prepare professionally competent and dedicated Nurses, Imbued with the spirit of service to humanity at large and ability to face various challenges while discharging their duties at primary, Secondary and tertiary levels of nursing care.

**Eligibility Criteria and Procedure: As per Himachal Pradesh Government Policy.**

# **AKAL COLLEGE OF ARTS AND SCIENCE**

## **Degree to be awarded: B.A, B.Sc. (Medical & Non- Medical)**

The Akal College of Arts and Humanities offers a 3 year programme leading to Bachelor of Arts degree. The college was established in 2009. The college offers B.A. degree with following subjects: -

- a) English Compulsory
- b) Punjabi Compulsory
- c) English (Elective)
- d) Punjabi (Elective)
- e) Rural Education Internship
- f) Religious Studies
- g) Computer Science (Medium of Instructions English)
- h) Psychology (Medium of Instructions English)
- i) Religious Studies (Medium of Instructions Punjabi)

B.Sc. Non- Medical (Chemistry, Physics, Math's, English)

B.Sc. Medical (Chemistry, Botany, Zoology, *English*)

### **Admission Criteria :**

The candidate should have passed 10+2 Examination in any stream (Arts, Commerce, Medical, Non- Medical) from reorganized school education board and its equivalent. The admission will be based on merit in the 10+2 examination.

# **AKAL COLLEGE OF NATUROPATHY AND HERBAL MEDICINE**

## **Degree to be awarded: M.Sc. (Naturopathy & Herbal Medicine)**

Akal College of Naturopathy and Alternative Medicine will be unique institution in the sense that it will combine ancient principles of healing from Ayurvedic, Chinese, Homeopathic, and Unani Medicine systems with the modern techniques and knowledge of allopathy. It will produce a new breed of Health-Care Professionals (Naturopathic Doctors) who will treat the causes of diseases rather than the symptoms thus providing affordable and effective system of healthcare for the people of Himachal Pradesh. A Special program will be crated where M.B.B.S./M.D. (allopathic doctors) will be entrained to practice Naturopathic Medicine. These new professionals may healthcare services in the state. Also, the college through its research activities will be instrumental in developing the Herbal Medicines Industry in Himachal Pradesh.

With a view to identify and manufacture herbal medicines, the Kalidhar trust has recently started cultivation of rare medicinal herbal plants on a scale large enough to prove and sufficiently demonstrate the economic and societal advantages of this type of pursuit at Baru Sahib, Faculty and professional staff of Akal College of Naturopathy and Alternative Medicines will play a major role in the endeavour and help the State establish this industry.

# **AKAL COLLEGE OF DIVINE MUSIC AND** **SPIRITUALISM**

## **Degree to be awarded: B.A (Hons.) in Music**

The Akal College of Divine Music and Spiritualism offers a 1+3 years programme leading to Bachelor of arts (honors degree in):-7

- I - Gurmat Sangeet
- II - Music instrumental (String Instruments)
- III - Music Instrumental (Tabla/ Pakhawaj)

**The first year is devoted to bridge course in elementary music.**

The courses are designed to integrate academic learning and professional skills development in music with traditional Guru –Shishya – Parampara (the system with which Indian traditional music thrived and nurtured for centuries). The students who do these courses will be able to get good jobs in teaching or in other professional areas in the field of music

# **AKAL SCHOOL OF ECONOMICS**

## **Degree to be awarded B.Sc. (Hons. School) in Economics.**

The Honours course in Economics will help students to develop skills that they need to get a good job. The school will establish strong links with industry and business in the region and offer support in finding work placements. Economics graduates are highly employable. Apart from the specific understanding of the subject, employers value the skills of numeracy and analysis, the ability to communicate and the capacity to grasp board issues which graduate at Baru Sahib are expected to become professional economists, many will find it excellent base for entry into a rewarding career in finance (Including accountancy, insurance, taxation, and banking) or management. They could also obtain employment in a variety of major national and international firms in commercial, manufacturing, service (hospitality, tourism), social (education, health) and I.T sectors. Some graduates may like to setup their own business organisation or go in for civil services competitive examinations. Smaller numbers may go on to take postgraduate studies either in economics, research, teachers training or further qualifications in specialist areas.

### **Forging Linkages with Foreign Universities and global institutions:**

With changing economic scenario, the focus of international community is shifting to countries like India, China and Brazil. There is also growing realization that global economic issues need global solutions. Efforts will therefore be made to establish academic tie ups and exchange programmes with foreign universities and international institutions. The school would aim at sending some students every year under the exchange program. An ultimate objective would be to establish dual degree programmes between Eternal University and reputed foreign academic institutions. As an initial step, guest faculty with economists of international repute belonging to such institutions as London Scholl of Economics, Cambridge, Berkeley and Harvard has been set up. The list will keep expanding s the degree programme progresses. This will enhance exposure of students to global economic perspective and forge relations in terms of academic exchange.

**Eligibility : 10 =2 Examination (at least 55% marks) in any stream ( Arts, Commerce, Medical and Non- Medical). Admission on merit.**



# **AKAL SCHOOL OF POST GRADUATE STUDIES**

## **Degree to be awarded: M.A. M.Sc., M.Tech, M.P.H, M.B.A and Ph.D**

The Akal School of Post Graduate Studies was established in 2010 by the Eternal University. The School aims at providing Value Based Latest Scientific and Technical Education for achieving the highest level of professional competence to the students as per demand of modern industries that makes their placement anywhere in the world easy. The school also strives to inculcate disciplined living, honesty, integrity, high moral character and hard work so that these students may become good human beings and assets to the nation. He school is committed to produce Scientists and Technocrats who have balanced personalities with high character and disciplined life.

# **AKAL SCHOOL OF PUBLIC HEALTH**

## **Degree to be awarded : Master of Public Health**

### **OBJECTIVES :**

The overarching goal of the MPH program is to provide students with a population perspective on health. The Akal School of Public Health designed the MPH program to prepare students to tackle current and emerging global public health problem.

Akal School of Public Health MPH program recognize that in today's world a thorough and rigorous health education must embrace multiple areas including:

**PUBLIC HEALTH** – Introduction, detailed description of working and different concentrations included under the public health perspective.

# **AKAL SCHOOL OF BUSINESS ADMINISTRATION**

## **Degree to be awarded : M.B.A & Ph.D. ( Marketing, Healthcare management and Human Resources)**

With the modern scientific and technological advancement and improved means of communication through Information Technology the world has become a small global village. In this fast changing world managing scarce resources (men, money and technology) has become a challenge where one needs unique quantitative and personal to be efficient, productive and competitive at the international scene.

Akal School of Business Administration will provide you with such skills and international training through a network of renowned faculty and exchange programs in the major areas of resource management including Marketing, Finance, Business, Economics, Business Administration, Health Care Management and H.R.

Akal School of Business Administration has a unique model of Value Based education and training where will freely interact with the local, National, and International industry and NGOs. Executives besides being will trained Business Executives, the graduates of Akal School of Business Administration will have deep commitment to community service and can play a major role in corporation social responsibility etc which is emerging as recent trend in the Corporate World.

# **AKAL SCHOOL OF CHEMISTRY**

## **Degree to be awarded : M.Sc. & Ph.D.**

The Department of Akal School of Chemistry was established in 2010. It is , since then, engaged in providing highest level and quality of academic education. The main focus of the teaching and research in the department is centered on interdisciplinary themes. This department features a three faculty member with expertise in different areas of research. Active research in the areas of heterocyclic synthesis, organometallic catalysis, Synthesis nano particles of metal oxide and synthesis of some macrocyclic compounds. The faculty members have contributed towards the publication in reputed journals.

The chief mission of the department is to generate human resource of excellent quality, including chemists with high professional competence in interdisciplinary research encompassing biology, chemistry and physics, for national needs. The department offers three programs leading to the award of MSc (2 Year post BSc with admission through complete examination), 3 year integrated BSc with Med & Non Med), and PhD Programs. A research project of duration for ½ year for MSc is compulsory for the partial fulfilment for the award of degree. In this period the students acquire opportunity to perform quality research in frontier areas.

# **AKAL SCHOOL OF PHYSICS AND NANO TECHNOLOGY**

## **Degree to be awarded : M.Sc. & Ph.D.**

### **Academic courses:**

There are various courses in the School of Physics are taking place at graduate, master and doctorate level. A brief outline of these courses is described below:

#### **A. Bachelor of Science (B.Sc.):**

This is a six semester course work

#### **B. Master of Science (M.Sc.):**

This is a two year course work. The various courses taught in these years are:

This is a four semester course work

#### **C. Doctor of Philosophy (PhD):**

There is two semester course work in PhD and the research in the field of:

- 1) Nanotechnology/material Science
- 2) High Energy physics
- 3) Condensed matter Physics

### **Research Projects**

The research projects currently being undertaken have focused on the advanced development of nano-particles and generation of new and emerging technologies. These projects are based on the improvement of applications based on the fabrication of nano materials. All the facilities and infrastructure for the synthesis of nano materials are available at the Eternal University, Baru Sahib (H.P.). The characterization and testing of the materials are held in collaboration with different research laboratory such as National Physical Laboratory - New Delhi; Panjab University, Chandigarh; Delhi University, Himachal Pradesh University-Shimla etc. The research fellows and supervisors work in a multi-disciplinary environment and have active collaboration with Akal School of Chemistry.



**AKAL SCHOOL OF BIOTECHNOLOGY (ASB), ETERNAL  
UNIVERSITY, BARU SAHIB**

**Degree to be awarded : M.Sc. & Ph.D. (Biotechnology)**

Akal School of biotechnology has been established in September 2010 in the Eternal University, Baru Sahib for providing postgraduate teaching and research and development in biotechnology with specialization I plant, pharmaceutical, environmental and animal biotechnology. After information technology application of biotechnology is likely to transform Indian and global economy for ensuring food, nutrition and health security to ever increasing population with sustainable use of natural resources. Advances in cell and molecular biology can be used at DNA, subcellular, cell, tissue and organ levels for rapid and directed improvement of microbes, plants and animals and their effective utilization by mankind hitherto impossible through conventional approaches. All the living organisms have become a single gene pool for cloning and desired expression of genes in heterologous systems. Keeping in view the scope and benefits of biotechnological interventions the Akal School of Biotechnology (ASB) has initiated and integrated postgraduate programme leading to M.Sc.-Ph.D. in biotechnology with a combination of innovative courses and basic research in different areas of specialization in biotechnology through highly trained and experienced faculty. The Eternal University has also entered into MOUs with national and international laboratories to enable the students to take up their research work effectively. Major emphasis will be given on improvement of functional food ingredients, biofortification of micronutrients and enhancement of their bioavailability, bio prospecting of medicinal plants for diverse pharmaceutical potential and conservation of ecosystem and biodiversity.

# **AKAL SCHOOL OF PSYCHOLOGY AND COUNSELLING**

## **Degree to be awarded: MA and Ph.D. in Clinical Psychology and Counselling Psychology**

The Master of Arts programmes have been designed to educate and train students to enter professional career as master's level practitioners. These courses methods necessary theoretical, clinical and counselling elements to develop attitudes, knowledge and skills in the formation of professionals who are committed to ethical quality.

Akal school of Psychology will also provide facilities leading to Ph.D. degree in the afore said field.

# **AKAL SCHOOL OF LIBRARY SYSTEM/TECHNOLOGY**

## **Degree to be awarded M.Lib IT and Ph.D**

The mission of the school is to produce ultimate holistic information literate people, who have learnt, how to learn by developing their skill and sharpening their integrated abilities to find, evaluate, use and communicate information in their personal and professional lives with a motto “knowledge about knowledge is the greatest power”.

The architecture of proposed course will be an interdisciplinary, integrated framework, combining library and information science and information technology (computer and artificial intelligence, and communication technology) to produce whole professional man power for 21<sup>st</sup> century.

The school will train human resources to meet the ever changing market demands of the society in government, industries, education, and research with innovative interdisciplinary qualifications, thereby making them reading employable

# AKAL SCHOOL OF FOOD TECHNOLOGY AND NUTRITION

## Degree to be awarded : M.Sc. (Food Technology); M.Sc. (Food Nutrition) and M.Sc.-Ph.D integrated

Food processing industry has emerged as one of the most promising sectors in India during the last few years. It has acquired the foremost position in manufacturing of value added food products and is likely to expand at a very fast rate. Liberalization of economic policy has resulted in opening up a new chapter of global cooperation and promoting entry of multinational companies in the country. This in conjunction with the Government policy to encourage food processing industry has necessitated availability of human resources adequately trained in all aspects of modern and global activities associated with food processing industry.

Over the past decades, food technology has attracted attention and is being recognized nationally and internationally as a essential field of study to pursue professional career in food processing and preservation. The present scenario of human resource development in Himachal Pradesh in the area of Food Technology shows a wide gap in the trained graduates and the expansion of food business programmes. There is a dire need to start a **Post-graduation programme** in Food Technology to cope up with the requirements of the food industry. There is hardly any such programme being undertaken at present in the state of Himachal Pradesh.

The department of Nutrition and Food Technology of the Eternal University, Baru Sahib has proposed to run a post-graduate programme with an innovative idea of developing health foods exploring the use of local medicinal plants in conjunction with fruits, vegetables and cereals produced in the state. The following objectives of the programme are:

### **Objectives:**

- Development of manpower in food technology
- Development of innovative technology for nutraceuticals and health foods
- Value addition of fruits, vegetables and cereals
- Study of nutritional benefits of health foods to the consumer
- Study of shelf life and storage stability of the health foods products
- Establish linkage with local farmers & food industry.

# **HANDSHAKE : COLLABORATIONS**

## **INTERNATIONAL ACADEMIC COLLABORATIONS**

1. Curtin University of Technology, Perth, Australia.
2. University of New South Wales, Australia.
3. Harvard University, Medical School, Cambridge (MA), U.S.A.
4. Kansas State University, Department of Plant Pathology, Kansas City (KS), U.S.A.
5. Wayne State University, college of Engineering, Detroit (MI), U.S.A. (MOU)
6. Drexel University, college of Nursing & Applied Sciences, Philadelphia (PA) U.S.A. (MOU)
7. Aarhus University, Department of Molecular Biology, Gustav Wieds, Denmark.
8. University of Wisconsin, Department of Mathematics, Madison (WIS) U.S.A.
9. John Hopkins University, Medical School, Baltimore (MD), U.S.A.
10. University of New Mexico, School of Medicine, Albuquerque (NM) U.S.A.
11. University of Birmingham, Department of Physics, Birmingham, (U.K.).
12. AKAMAI University, HILO (HI), U.S.A.
13. University of Toronto at Mississauga (Ontario), Canada.
14. University of British Columbia, Department of Human Nutrition Vancouver (BC), Canada.
15. John Hopkins School of Public Health, Baltimore (MD), U.S.A.

# **NATIONAL ACADEMIC COLLABORATIONS**

1. Punjab University, Economics Honours School, Chandigarh (UT).
2. GNDU, Department of Physics, Amritsar (Punjab).
3. GNDU, Department of Electronics & Communication Engineering, Amritsar (Punjab).
4. Punjabi University, Department of Botany, Patiala (Punjab).
5. Central University of Punjab, Bathinda (Punjab).
6. Thaper University Patiala (Punjab)
7. Delhi University, Applied Chemistry, Delhi.
8. IIT Roorkee, Biotechnology, Roorkee.
9. IIT Delhi, Biotechnology, Delhi.
10. National Physical Laboratory, Nanotechnology, Delhi.
11. NIT Hamirpur, H.P.( MOU).
12. NIPER, National Institute of Pharmaceutical Education Research, Mohali (Punjab).
13. Punjab Biotechnology Incubator, Mohali (Punjab).
14. Panacea Biotechnology, Mohali (Punjab).
15. Dabur Pharmaceuticals, Delhi.
16. Punjab Agriculture University, Department of Nutrition & Food Technology, Ludhiana (Punjab).
17. H.P.U., Department of Physics/Nano Technology, Shimla (H.P.)
18. I.H.B.T (CSIR) Lab, Palampur (H.P.)
19. COSMO FERRITES, Jabli (H.P.)
20. TINCHEM ENTERPRISES, Patiala (Punjab).

# **FOUNDATION OF KNOWLEDGE: ETERNAL** **UNIVERSITY LIBRARY**

## **LIST OF TOTAL BOOKS, PRINT JOURNALS, e- JOURNALS PURCHASED OR SUBSCRIBED**

**W.E.F 1<sup>ST</sup> APRIL 2010 TO 31<sup>ST</sup> MARCH 2011**

### **A. ACQUISITION OF READING MATERIAL :**

- 1. Total No. of Books Purchased = 1536 Books**  
**Total Amount of Books = 7,55,920 / - (Rs.)**
  
- 2. Total No. of Print Journals & Magazines Subscribed = 35**  
**Total Amount of Print Journals & Magazines = 67600 /- (RS.)**
  
- 3. Total No. of E-Journals Subscribed = 1435 ( J-Gate Engg. & Technology E-Journals)**  
**Total Amount of e-Journals = 66,180 /- (RS.)**
  
- 4. 5000 books added to Post- Graduate Library a newly created venture.**
  
- 5. Total Books in Eternal University Library = 22000 Books**
  
- 6. Total No. of Computers in Under- Graduate Library = 50 Computers**
  
- 7. Total No. of Computers in Post- Graduate Library = 20 Computers**

### **B. AUTOMATION OF LIBRARY :**

- (a) Fully classified reading material following DDC 21<sup>st</sup> Edition.**
- (b) About 30 % of stock has been put into OPAC and Barcodes fixed.**
- (c) Work Study Programme: 10 students of the University have been provided with work study facility in order to facilitate “Earn While Learn” attitude.**
- (d) Official archive has been established.**
- (e) 50 computers for access of internet, E-Journals & Educational Resources.**

## **TRANSMITTERS OF INFORMATION :IT** **EQUIPMENTS AND E-LEARNING**

<b>TOTAL COMPUTER SYSTEMS- 270</b>	
LAB (A)	30
LAB(B)	30
LAB(C)	30
LAB(D)	30
E-Library	50
ACN LAB	11
Faculty & Staff	89
<b>OTHERS EQUIPMENT'S</b>	
Printers-	34
Projector-	09
Active Board	01
Scanner	06
IBM Server	02
Virtualized Server	04
Security Server	02
Cisco Router 2600	01
Wireless AP	08
SMS Server	01
Exchange Server	01

### **CAMPUS LICENSES:**

#### **Microsoft:**

Windows 7,Windows XP,Windows Server 2008,Windows Server 2003,Microsoft office 2007,Microsoft office 2010,Asp.Net

#### **SERVERS:**

SMS (SCCM) Server, TMG Server, ISA Server, Exchange Server,

#### **ADOBE:**

Adobe Photo shop, Adobe Flash Player

#### **ERP SYSTEM**

University ERP



# **ETERNAL UNIVERSITY E – LEARNING SYSTEM**

## **E-Learning Intervention in Schools, Colleges and Universities**

Realising and recognising that E-Learning would be the future trend in education, we have initiated towards empowering the teachers with the requisite knowledge to adopt E-Learning methodology.

E-learning an acronym for electronic learning commonly refers to the use of multimedia technologies and/or the Internet to provide computer-enhanced learning. Focus of E-Learning is to improvise the quality of learning by facilitating access to multiple resources & services. This requires collaborative use of technology, tools and human resources to ensure that the student teacher interaction is more interesting and meaningful.

**1. Advanced E-Learning System:** ACE E-learning portal offers a combination between the features of a classical learning management system and a web portal. ACE E-learning portal forms the basis of online learning in the Inter - or Intranet. This platform works as:

- **Learning Management System (LMS)** Learning management system is a web-based software application platform used to plan, implement, and assess learning processes related to online and offline training, administration and performance management. The teachers can create various courses and host it on the server for students to access. LMS allow an instructor to create and deliver content, monitor learners' participation, and assess student performance.

ACE E-Learning System also allow learners to use interactive features such as **threaded discussions, web conferencing, discussion forums, newsletter, chat, e-Votes, black board, e-Messaging, news and group calendar ranges**, and other methods of communication.

ACE E-learning System enables teachers and learners to **create and deliver** engaging imaginative and flexible ways. From Podcasting and Blogging through to ACE E-learning connects students to the **latest online tools**, trends and information. With iPod syncing students have the ability to take their content and learn on the go.

**2. Academic content:** Huge learning content is available free\* on Internet covering all main subjects. The teachers go through the entire content, **get latest and required information from Internet, and prepare lessons in advance and get comfortable with using the multimedia content for teaching learning process.**

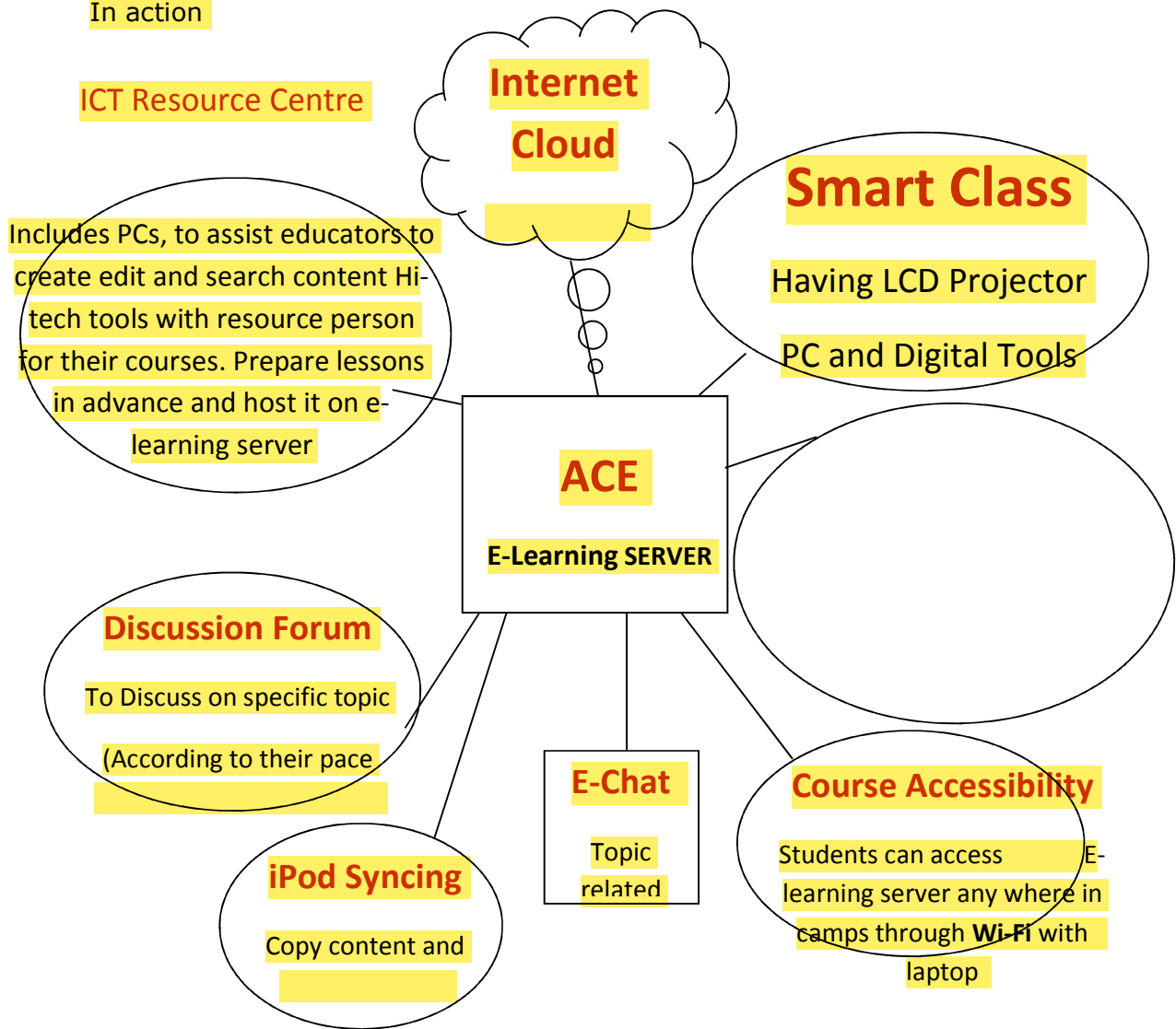
e.g. <http://pptpoint.com>, <http://wikipedia.org>, <http://teacherstv.tv>

**\*ACE Stands for Akal College of Education**

**ACE E-Learning System (Smart Class)**

In action

ICT Resource Centre



## **ACE E-learning LMS features...**

- Compliant with AICC and SCORM course communication standards
- Completely web-based, including all administrator capabilities
- Tracks and displays detailed interactions
- Contains the most popular LMS features in a simple format
- Really Simple Syndication (RSS) Feeds
- Quick Links Bar
- Enhanced User Interface
- IMS Export Import
- iCal import export
- New and Improved Games
- Live Chat Resource
- Blogs
- ePortfolio
- Individual Learning Plans
- iPod Synchronisation
- Podcast
- Discussion
- Group Writing
- QT Assessment
- Surveyor
- Reporting Module

## **Courses in E-Learning System**

### **Miscellaneous**

- Happy New Year
- Live Nitnem From Baru Sahib

## **Teaching English**

## **How to use E-Learning Server**

## **Akal College of Engineering and Technology**

## **Electronics & Communication Engineering (ECE)**

- Digital Signal Processing
- Electrical & Electronics Engineering (EEE)
- Power System Operation and Control

## **Computer Science & Engineering (CSE)**

- Course Fullname 101
- FIRST SEMESTER
- SECOND SEMESTER
- THIRD SEMESTER
- FOURTH SEMESTER
- Computer Graphics
- FIFTH SEMESTER
- SIXTH SEMESTER
- Microprocessor Svstems
- Object Oriented Software Engineering
- OO Software Engineering Lab
- SEVENTH SEMESTER
- EIGHTH SEMESTER
- Information Technology (IT)
- SEMESTER 8
- Human Computer Interaction UID
- Information System Security

## **B.Sc.**

- Semester 4
- Money & Financial Markets
- BA Humanities
- Basic Computer
- Akal College of Nursing & Health Sciences
- Introduction To Computers
- Concise Biology
- Spoken English
- Speak English in 30 Days
- Library

## **EARN WHILE LEARN : WORK STUDY** **PROGRAMME FOR STUDENTS**

In order to help financially weak students and to inculcate love for labor a “Work Study” Programme was initiated at the time of admission for Eternal University students this year. The remuneration was fixed Rs. 100 per hour, which will be deposited in to respective accounts of the students in order to enable him / her make payments of dues instead of making cash payments. This move of “Earn While Learn” is very much popular among the needy students at present following twelve students have been enrolled as beneficiaries of this project.

## **FUTURISTIC UMBRELLA :ETERNAL** **UNIVERSITY TRAINING & PLACEMENT CELL**

Training & Placement Cell, aims to ascertain the needs of the students for (i) the acquisition of technical skills - especially the Computer Languages & (ii) the improvement in soft skills. It organizes training of students as per these needs & the requirements of the industry and supports the students for their placement in appropriate companies.

The Cell functions under the overall charge of a Faculty In-charge, Training & Placement - Prof Jagmohan Singh, who provides the relevant guidance & counseling to the students. The Cell is fully supported by a senior level committee, which comprises Advisors & Consultants from all over India. The committee functioning is co-ordinated by the Advisor (Dr Neelam Kaur ji) of the sponsoring organization (Kalgidhar Trust), of the University and it keeps the Vice Chancellor of the Eternal University, Dr. Manmohan S. Atwal, posted of the developments.

Training, where required, is organized for improving skills in communication, presentation, group discussions, organization behavior, etc. For final year students, a crash course for training and orientation was conducted during March 25 – April 3, 2011. Based on the feedback and the changing scenario in industry and the competition from the students in the other universities, a job oriented integrated training program is contemplated in the University.

Placement activities, relate to guiding & motivating students, inviting the organizations to the Campus, organizing enrollment of the eligible students for the recruitment events, arranging to take the students to the recruitment venues, compiling the feedback, for purposes of gap identification & for designing training & development of the necessary infrastructure. All the possible recruitment events of the companies are intimated to the students, in advance.

**Students' participation in the following recruitment events, has been organized, till date:**

- (i) M/s Sasken Technologies at DIET, on Jan 25, 2011
- (ii) M/s KPIT Cummins Insosystems Ltd at CGC, Landran, on 30<sup>th</sup> Jan 2011
- (iii) M/s Energized Solutions at CGC, Gharuan, on Feb 1, 2011
- (iv) M/s KPIT Cummins India Ltd at CGC, Landran, on Feb 2, 2011
- (v) M/s Oracle Financial Services at CGC, Gharuan, on 11<sup>th</sup> Feb 2011
- (vi) M/s Siemens at CGC on 26<sup>th</sup> Feb 2011
- (vii) Exclusive recruitment event at Baru Sahib, for M/s iYogi, on Mar 9, 2011
- (viii) M/s Niagarro Software Pvt Ltd at CGC, Landran, on Mar 11, 2011
- (ix) Armed Forces (Tech Graduate Entry Scheme), Brig (Dr) S.S. Parmar, on Mar 11, 2011
- (x) Exclusive recruitment event at Baru Sahib, for M/s pyramidci.com, on Mar 27, 2011.
- (xi) Exclusive recruitment event at Baru Sahib, for M/s WIPRO, on April 7, 2011.

**ACHIEVEMENTS:**

A large number of our students have been offered their first appointment by M/s i-yogi.com, through their training programme. This company is one of the fastest growing companies. Some others have been selected for their appointment by the well-known M/s WIPRO. M/s pyramidci.com has also admitted ACET as a source of its technical manpower.

ACET students were admitted to all the above companies, for their placement. The College has specifically been included in the panel of engineering colleges of M/s Niagarro Software Pvt Ltd, for their requirements.

## RESIDENCE: ETERNAL UNIVERSITY HOSTELS

Eternal University Baru Sahib is taking due care of its students by providing them homes away homes with eight storied hostels buildings constructed and furnished beautifully & tastefully.

1. Eternal University Boys Hostel	<b>Owner</b>	1354 sq.mt	11,350.5 sq. mt.	17,8,828,426.00	Complete	Yes
2. Eternal University Girls Hostel	<b>Owner</b>	871 sq.mt	6,314.72 sq. mt.	16,3,215,304.00	Complete	Yes

### ETERNAL UNIVERSITY HOSTEL FACILTIES

1. Eternal University is a totally residential university.
2. There are separate hostels for boys and girls on the University campus. The rooms are very spacious.
3. In the Boys hostel hot water is supplied in the morning and in the evening through a boiler. In the Girls hostel geysers are provided in the bathrooms for hot water.
4. The students can choose single, double or three seater rooms in the hostel.
5. On each floor of the hostel cold drinking water supply is provided during summer.
6. On each floor of the hostels there is a **common room** with indoor game facilities such as carom, chess.
7. On each floor of the hostels there is a **T.V.** in common rooms. Very hygienically prepared nutritious vegetarian food is served in the hostels. **News Papers** are provided in the hostels.
8. **Internet facility:** 24 hours (2 MBPS) internet facility in the hostels.
9. 24 hour uninterrupted power supply.
10. Security personnel are posted on the university campus and in hostels 24 hours.
11. Gymnasium is provided in the hostel.
12. There is a canteen in both the hostels.
13. Guest facility for student's parents to stay with their wards.
14. Drugs free, smoking free, liquor free environment.
15. Laundry service



## **AUDITORIUM HALL**

There is sound proof auditorium with seating capacity of 300 students and is equipped with modern equipment's.

### **Setting of Common Rooms:**

To provide physical facilities to the students of Eternal University. Two common rooms are set up in the main building of the university.

### **Girls Common Room:**

it is situated at ground between Auditorium and Faculty Lounge.

### **Boys Common Room :**

It is situated at 5th floor room No. 504a.

The students can use these common rooms for various activities i;e relaxing, group discussions and small meetings.

# **EXTRA CURRICULAR ACTIVITIES AT** **ETERNAL UNIVERSITY**

**The following clubs are in operating in the campus in the past.**

- 1. Robot Club**
- 2. Eternal English Literary Club**
- 3. Solar Energy Club**
- 4. Athletic Club**
- 5. Debate Club**
- 6. Eternal Technocrats club**

# **HOW TO REACH US**

## **Contact us**

### **Mailing Address:**

**Eternal University,  
Baru Sahib,  
Via Rajgarh, Distt. Sirmour,  
Himachal Pradesh-173101**

E-mail queries : [admissions@eternaluniversity.edu.in](mailto:admissions@eternaluniversity.edu.in)  
[contact@eternaluniversity.org](mailto:contact@eternaluniversity.org)

### **Akal College of Engineering and Technology**

Concern Person (s) : Dr. I.S Hudiara, Dr. Ramanjeet Singh  
Mobile : 09816400641, 09805098724  
Landline Phone : 01799-276002  
Fax : 01799-276006

### **Akal College of Post Graduate Studies**

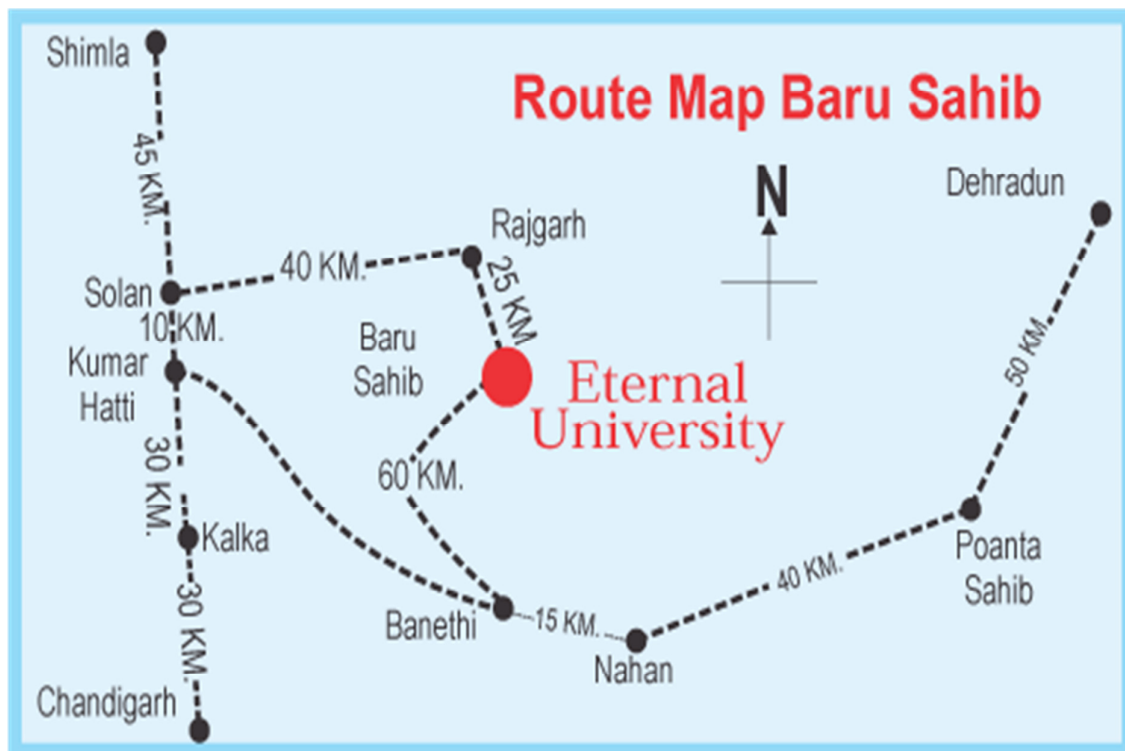
Concern Person (s) : Dr. I.S Hudiara, Dr. K. S. Saini, Dr. Ramanjeet Singh  
Mobile : 09816400641, 09805098724, 09805098709  
Landline Phone : 01799-276002  
Fax : 01799-276006

### **Akal College of Nursing**

Concern Person : Mrs. Ranjeet Kaur (Principal)  
Mobile : 09805098719, 0962588574  
Landline Phone : 01799-276025  
Fax : 01799-276006

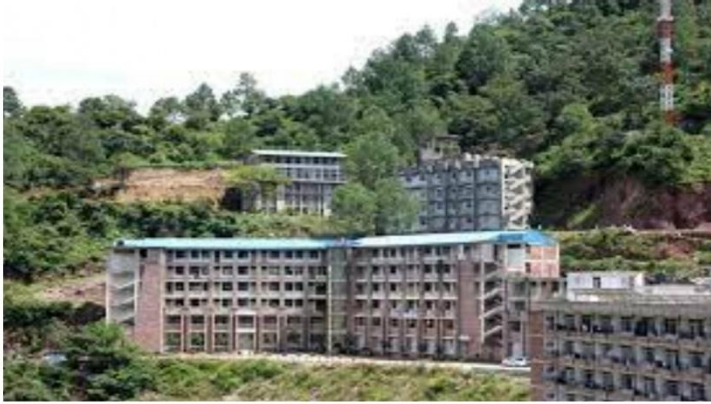
## Akal College of Divine Music and Spiritualism

Concern Person : Dr. Purvi Luniyal (Principal)  
Mobile : 09816400543  
Landline Phone : 01799-276031, 01799-276071  
Fax : 01799-276004





## Eternal University



**SARAL ERP™**  
Simplify Complexity



User Name



Enter User Name

Password



\*\*\*\*\*

Remember Me

Login

**ERP Login Page (URL to access from outside the Campus =  
<https://erp.eternaluniversity.edu.in>)**



# EU-Learning Portal

Search Courses

🔍 (Search Courses)

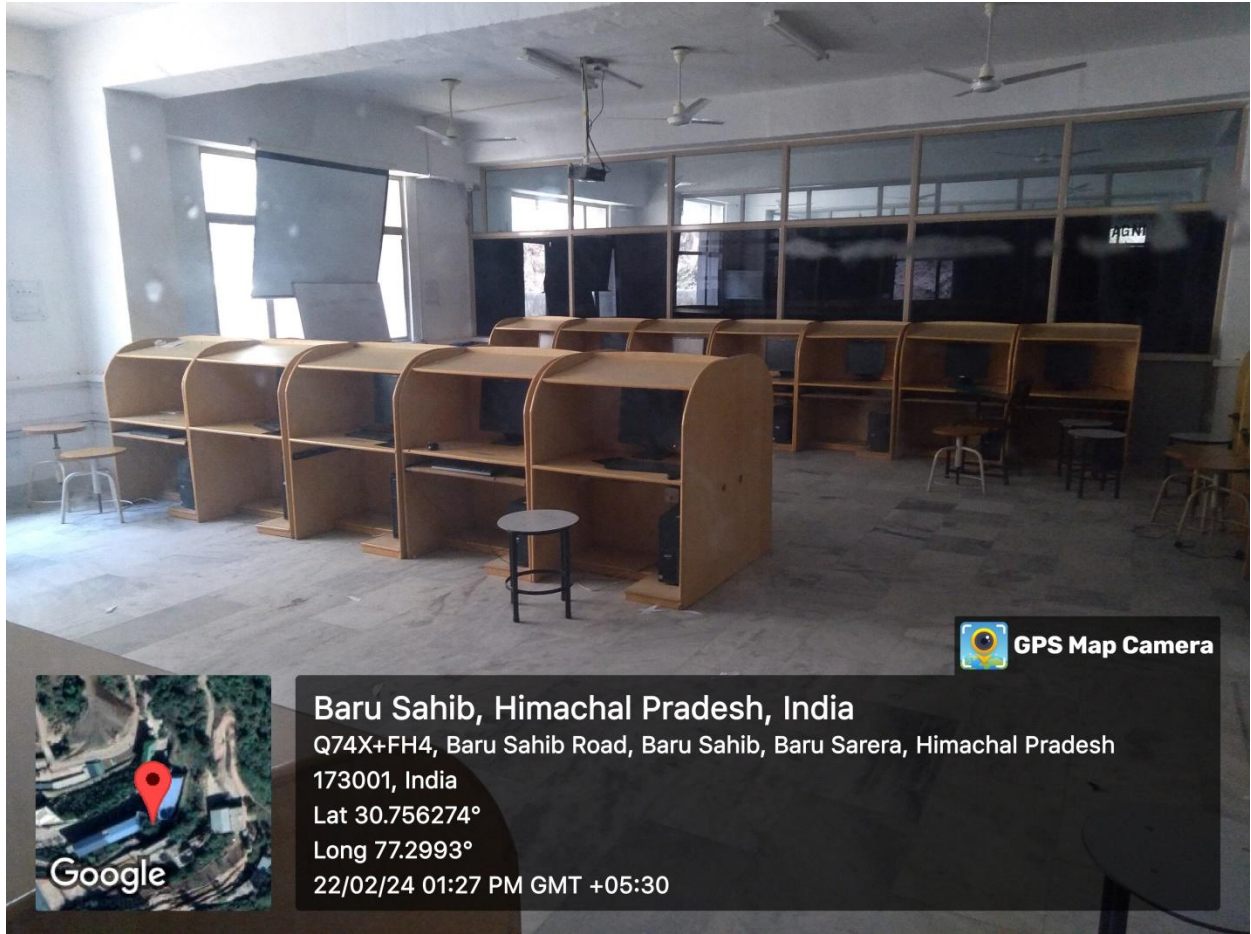
Remember username  
[Forgotten your username or password?](#)  
Cookies must be enabled in your browser [?](#)  

Log in

ETERNAL UNIVERSITY  
BARU SAHIB, VIA RAJGARH, DISTT. SIRMOUR- 173101 (HIMACHAL PRADESH)

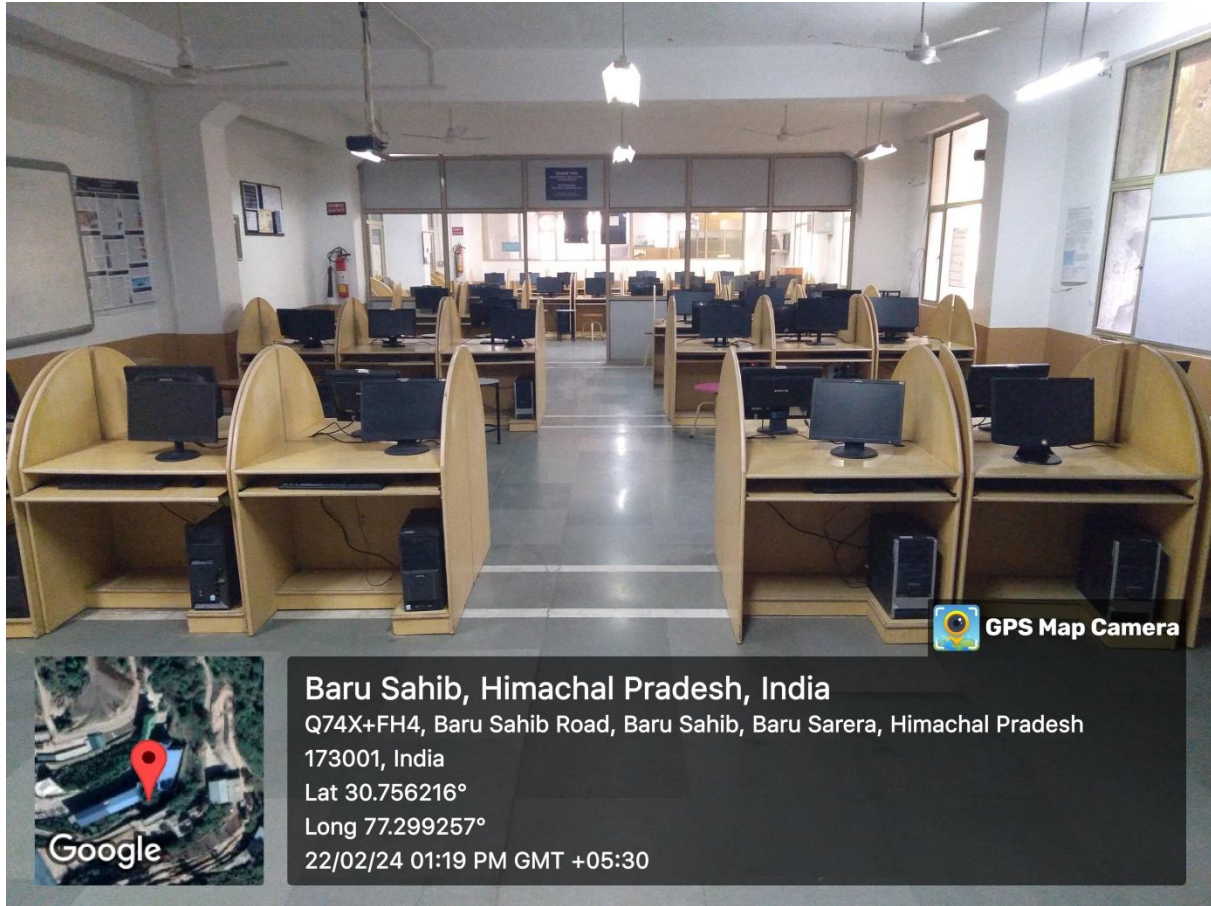
[Get the mobile app](#)

## EU Learning Management System Login Page



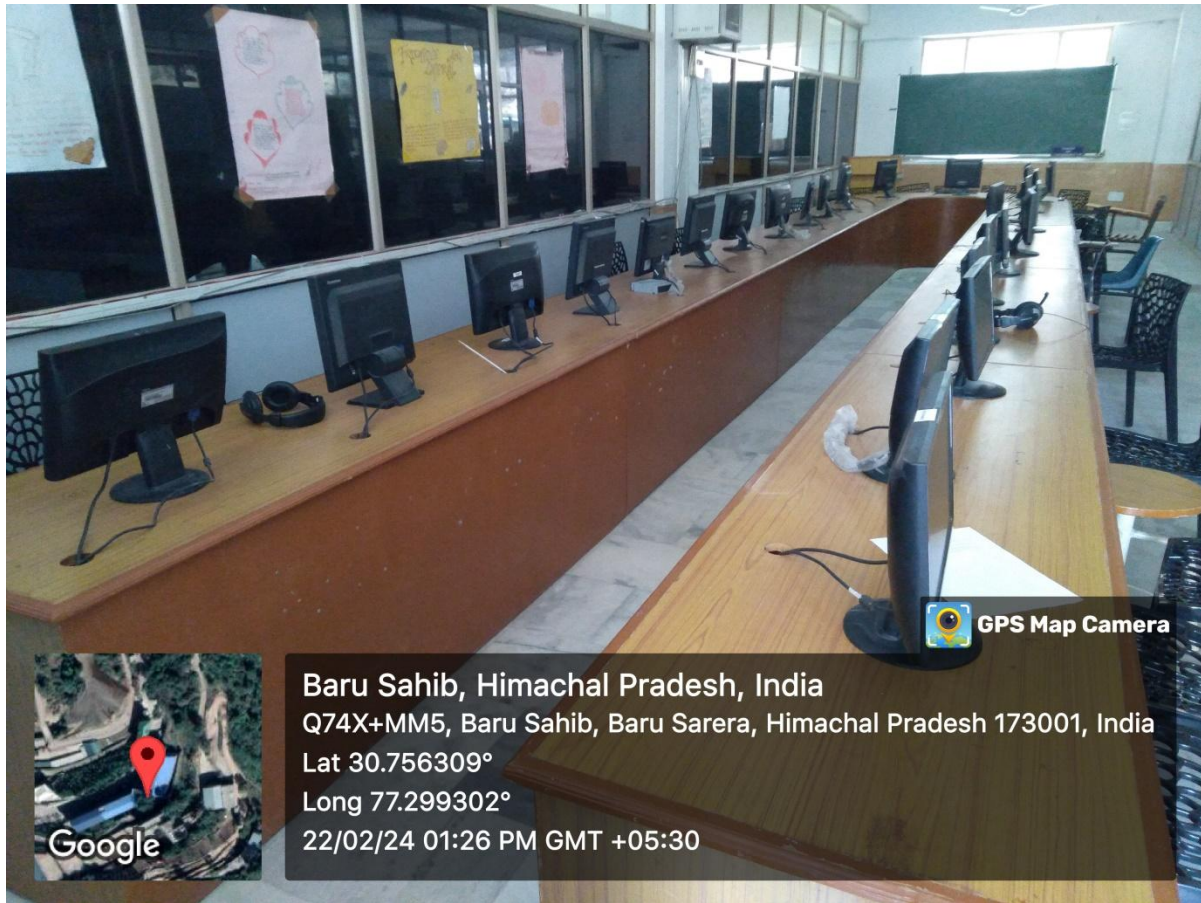
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## Computer Lab 5<sup>th</sup> Floor



## Computer Lab 3<sup>rd</sup> Floor






Baru Sahib, Himachal Pradesh, India  
Q74X+MM5, Baru Sahib, Baru Sarera, Himachal Pradesh 173001, India  
Lat 30.756309°  
Long 77.299302°  
22/02/24 01:26 PM GMT +05:30

## Computer Lab 5<sup>th</sup> Floor

> Profile



**Ajar Nath Yadav**

[Preferences](#)

[Edit profile](#)

ajarbiotech@gmail.com

- About me
- Courses
- More
- Edit profile

**Description**

Dr. **Ajar Nath Yadav** is currently working as Head, Department of GPB and Biotechnology, Dr. KSG Akal College of Agriculture, Eternal University, Baru Sahib, Himachal Pradesh, India. Dr. Yadav has 323 publications with h-index 85, i10-index 294, and 20449 citations. Dr. Yadav is the editor of 32 books (Springer, Elsevier, Wiley, Taylor and Francis). Dr. Yadav published 133 research communications.


Dr. Yadav is among **2% world scientist** in 2022 and 2023. Dr. Yadav has got 19 Best Paper Presentation Awards, and one Young Scientist Award (NASI-Swarna Jayanti Purskar). Dr. Yadav received "Outstanding Teacher Award" in 6th Annual Convocation 2018 by Eternal University, Baru Sahib, Himachal Pradesh. Dr. Yadav has a long standing interest in teaching at the UG, PG and PhD level and is involved in taking courses in agriculture microbiology, bacteriology, biosystematics and biodiversity, bioprocess engineering and technology, environmental biotechnology, environmental microbiology, industrial microbiology, microbial biotechnology and techniques in microbiology and biotechnology.

<https://sites.google.com/site/ajarbiotech/>

### Navigation

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  - BT-511
  - EC-202
  - BT-506
  - ELCT-311
  - More...

> Profile



**Ajar Nath Yadav**

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ajarbiotech@gmail.com

- About me
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- Course profiles**
- MOCK TEST 2020
  - Research Methodology (RM-598)
  - Ph.D. Entrance Test
  - MOCK TEST
  - Production Technology for Bioagents and Biofertilizer
  - Techniques in Biotechnology-II
  - Bioprocess Engineering and Technology
  - Bio-pesticides and bio-fertilizers
  - Techniques in Biotechnology-I
  - Biopesticides and Biofertilizers
  - General Microbiology
  - Biopesticide and Biofertilizers
  - Principles of Microbiology (Suppl)
  - Environmental Biotechnology
  - Food Biotechnology

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Not secure https://lms.eternaluniversity.edu.in/my/

English (en) Dr. Ajar Nath Yadav

# EU-Learning Portal

Search Courses

Home Dashboard Events My Courses Customise this page Hide blocks Full screen

**ANNOUNCEMENTS** No news items to display

**Recently accessed courses**

PhD Entrance Test

Miscellaneous  
Ph.D. Entrance Test

PhD Entrance Test

Miscellaneous  
Research Methodology (RM-598)

**Course overview**

In progress

ACA ... ACA ... ACA ... ACA ...

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English (en) Dr. Ajar Nath Yadav

# EU-Learning Portal

Search Courses

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**COURSE OVERVIEW**

In progress

ACA  
Agricultural  
Microbiology

ACA  
Bio-pesticides and bio-  
fertilizers

ACA  
Biopesticide and  
Biofertilizers

ACA  
Biopesticides and  
Biofertilizers

ACA  
Bioprocess  
Engineering and  
Technology

ACA  
Environmental  
Biotechnology

ACA  
Food Biotechnology

ACA  
General Microbiology

Miscellaneous  
★ MOCK TEST  
0% complete

Miscellaneous  
MOCK TEST 2020

ACA  
Principles of  
Microbiology (Suppli)

ACA  
Production Technology  
For Bioagents and ...

Miscellaneous  
Research Methodology

ACECM  
Research Methodology

ACA  
Techniques in

ACA  
Techniques in

READY-401

BT-512

BT-511

EC-202

BT-506

ELCT-311

More...

**Calendar**

March 2024

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			1	2	3	
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

**Online users**

1 online user (last 5 minutes)

Ajar Nath Yadav



# Agricultural Microbi ...

Search Courses

Courses > ACA > Micro-101

**Micro-101**

Open all Close all

Instructions: Clicking on the section name will show / hide the section.

- 1 **Notes for UNIT 1-6 - Toggle** Topic 1
  - Unit-1
  - Unit-2
  - Unit-3
  - Unit-4
  - Unit-5
- 2 **Mid Term Exam Micro-101 - Toggle** Topic 2

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  - BT-511
  - EC-202
  - BT-506
  - ELCT-311
  - More...

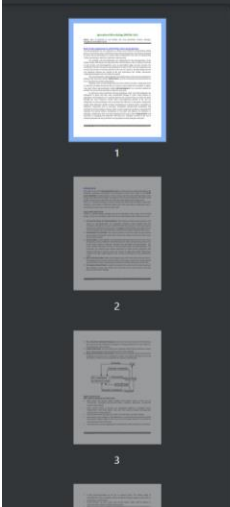




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Apps GS G-Translate LG S-Hub Mole Biol JOB Univ BANK Journal Journal-1 EMAIL EU Hare Krishna Hemantkumar Rail Fellow All Bookmarks

Unit 3.pdf 1 / 11 | - 100% +



### Agricultural Microbiology [MICRO-101]

**Unit-3: Role of microbes in soil fertility and crop production: Carbon, Nitrogen, Phosphorus and Sulphur cycles**

**Role of microorganisms in soil fertility and crop production**

Soil microorganisms are very important as almost every chemical transformation taking place in soil involves active contributions from soil microorganisms. In particular, they play an active role in soil fertility as a result of their involvement in the cycle of nutrients like carbon and nitrogen, which are required for plant growth.

For example, soil microorganisms are responsible for the decomposition of the organic matter entering the soil (e.g. plant litter) and therefore in the recycling of nutrients in soil. Certain soil microorganisms such as mycorrhizal fungi can also increase the availability of mineral nutrients (e.g. phosphorus) to plants. Other soil microorganisms can increase the amount of nutrients present in the soil. For instance, nitrogen-fixing bacteria can transform nitrogen gas present in the soil atmosphere into soluble nitrogenous compounds that plant roots can utilize for growth.

The microorganisms, which improve the fertility status of the soil and contribute to plant growth, have been termed '**biofertilizers**' and are receiving increased attention for use as microbial inoculants in agriculture.


Similarly, other soil microorganisms have been found to produce compounds (such as vitamins and plant hormones) that can improve plant health and contribute to higher crop yield. These microorganisms (called '**phytostimulators**') are currently studied for possible use as microbial inoculants to improve crop yield.

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Apps GS G-Translate LG S-Hub Mole Biol JOB Univ BANK Journal Journal-1 EMAIL EU Hare Krishna Hemantkumar Rail Fellow All Bookmarks

Unit 4.pdf 1 / 9 | - 100% +



### Agricultural Microbiology [MICRO-101]

**Unit-4: Biological nitrogen fixation: symbiotic, associative and asymbiotic. Azolla, blue green algae and mycorrhiza**

**Biological nitrogen fixation**

Sustainable agricultural systems employ natural processes so as to achieve acceptable levels of productivity as well as the food quality simultaneously minimizing the adverse environmental impacts. There are several soil fertility factors which also contribute to the sustainable agriculture through the control of the soil borne disease, including increased soil microbial activity leading to the increased competition and increased parasitism within the rhizosphere. Greater emphasis has been placed on the indigenous soil microbes which contribute to the fertility of the soil, increased plant growth as well as the plant protection. Plant growth promoting microbes are capable of promoting the growth of the plants directly as well as indirectly. There are different mechanisms of plant growth promotion such as symbiotic or asymbiotic nitrogen fixation, secretion of various phytohormones including the auxins, gibberellins, cytokinins, production of ACC deaminase for the reduction of the ethylene levels in the roots of the crops which further enhances root length as well as the density, production of siderophores, various lytic enzymes such as the chitinases, cellulases, HCN against the pathogens, production of various water soluble vitamins including niacin, thiamine, riboflavin, pantothenic acid which enhances the resistance to drought and oxidative stresses. The use of the plant growth promoting microbes in agriculture can favor a reduction in use of the chemical fertilizers and can enhance the productivity of the crops in an eco-friendly manner.

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Unit 5.pdf 1 / 6 100% + ↻

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## Agricultural Microbiology [MICRO-101]

**Unit-5: Rhizosphere and phyllosphere**

**Rhizosphere**

The root system of higher plants is associated not only with soil environment composed of inorganic and organic matter, but also with a vast community of metabolically active microorganisms. As living plants create a unique habitat around the roots, the microbial population on and around the roots is considerably higher than that of root free soil environment and the differences may be both quantitative and qualitative.

It is the zone/region of soil immediately surrounding the plant roots together with root surfaces, or it is the region where soil and plant roots make contact, or it is the soil region subjected to influence of plant roots and characterized by increased microbial.

Term "**Rhizosphere**" was introduced for the first time by the German Scientist **Hiltner (1904)** to denote that region of soil which is subjected to the influence of plant roots.

**Starkey (1938)** examined the rhizosphere region of some plant species and demonstrated the effect of root exudates on the predominance of bacterial population in particular and other soil microorganisms in general in the rhizosphere region. Thus, he put forth the concept of "**Rhizosphere effect / phenomenon**"

**FE Clark (1949)**: Coined the term "**Rhizoplane**" to denote the root surface together with

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Mid Term Exam Micro-101

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3 **Practical Exam Micro-101 - Toggle** Topic 3

Practical Exam Micro-101

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4 **End Semester Exam Micro-101 - Toggle** Topic 4

End Semester Exam Micro-101

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5 **Practical Exam Micro-101 (18/09/2020) - Toggle** Topic 5

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6 **MICRO-101 Examination 2021 - Toggle** Topic 6

MICRO-101 Mid Sessional Exam (21/06/2021)

MICRO-101 Practical Examination (06/08/2021)

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### Description

**Naseer Ahmed. M.Sc., Ph.D.**, is Head of the Department, at Department of Food Technology, Dr. Khem Singh Gill, Akal College of Agriculture, Eternal University, Baru Sahib, Himachal Pradesh, India. Ahmed's responsibilities include Administration, Research and Development, development of intervention technologies for food protection, process and quality optimization.

Ahmed is the recipient of various prestigious national and international awards such as Young Scientist award, Best University researcher award, Global Young Scientist Award etc. Ahmed has 09-plus years of teaching, research and administration experience in the areas of biological macromolecules, processing technology, quality assurance, and risk analysis.

Ahmed has more than 40 publications in internationally reputed journals and 6 book chapters and 1 book. He is an active reviewer for the many scientific journals of repute.

Ahmed earned his Ph.D. in Food Science and Technology with emphasis in proteins from Chaudhary Charan Singh Haryana Agriculture University Hisar, India under the guidance of Dr. Saleem Siddiqui (Former Dean College of Basic Sciences). He is the recipient of Best Ph.D Thesis award and best Paper presentation award for his work during the Ph.D.

He is also Head and Certified Quality Manager (CQM) at Akal Food Safety and Quality Control Laboratory, Eternal University, Himachal Pradesh, India. Ahmed has also participated in the Faculty Development program at the Eternal University, CCS Haryana Agriculture University, National Agricultural Development Cooperation Ltd. and Agro-environmental Development Society

### Interests

Teaching and Research

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- [Technology of Cereals, Pulses and Oilseeds](#)
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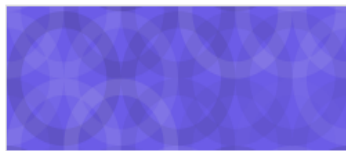
## ☰ Recently accessed courses



ACA  
Food Processing



ACA  
Post-harvest Management and Value Ad...



ACA  
Food and Nutritional Biochemistry



Miscellaneous  
Recent Advances in Cereals, Pulses & Oi...



ACA  
Livestock and Poultry Management


















## Course overview



▼ All (except hidden) ▾

📄 Course name ▾

📄 Card ▾

 <p>ACA Diseases of Field and Horticultural Crops and ...</p>	 <p>ACA Food and Nutritional Biochemistry</p>	 <p>ACA Food Biochemistry and Nutrition</p>	 <p>ACA Food Chemistry of Micronutrients</p>
 <p>ACA Food Processing</p>	 <p>ACA Introduction to food science, Post Harvest ...</p>	 <p>ACA Livestock and Poultry Management</p>	 <p>Miscellaneous MOCK TEST</p> <p>0% complete</p>
 <p>Miscellaneous Nutraceuticals and Health foods</p>	 <p>ACA Post-harvest Management and Value Addition of ...</p>	 <p>ACA Post-Harvest Technology for Horticultural Crops</p>	 <p>ACA Processing and value addition of horticultural ...</p>
 <p>ACA Processing of Fish and Marine Products</p>	 <p>ACA Processing Technology of Beverages</p>	 <p>ACA Protected Cultivation &amp; Post Harvest Technology</p>	 <p>Miscellaneous Recent Advances in Cereals, Pulses &amp; Oilseeds ...</p>
			



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Technology of Cereals, Pulses, and Oil seeds - Toggle

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FT-308 Exam
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End Term Theory Exam Processing of Beverages FT 308

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+ Add an activity or resource

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- UNIT-I

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## Dr. Pawan Kumar Dubey

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dubey975@gmail.com

About me

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### Description

Dr. Pawan Kumar Dubey has a diverse experience of 15 years in academics and corporate world. Dr. Dubey is an MBA with a specialization in Finance from V.B.S Purvanchal University (A state Government University), Uttar Pradesh in 2008.

After completing MBA degree, He worked with various organizations in India (Reliance Communications Ltd, Bajaj Allianz Life Insurance, Sherwood Business School, and Department of Income Tax). Dubey has consistently delivered key results in various customer segments and markets throughout his career and achieved many awards for his better performance. He received the "Certificate of Appreciation" from Jindal Steel and Power Ltd. He has also attended 26 days workshop on Business Skill Development Program, Sponsored by MSME , Govt. of India.

With Bajaj Allianz, he held the Business Development Manager roles involving interdisciplinary responsibilities for business and other team members for achieving the targets. With Department of Income Tax, Government of India, he delivered lectures to the employees of Income Tax for getting their internal departmental promotion.

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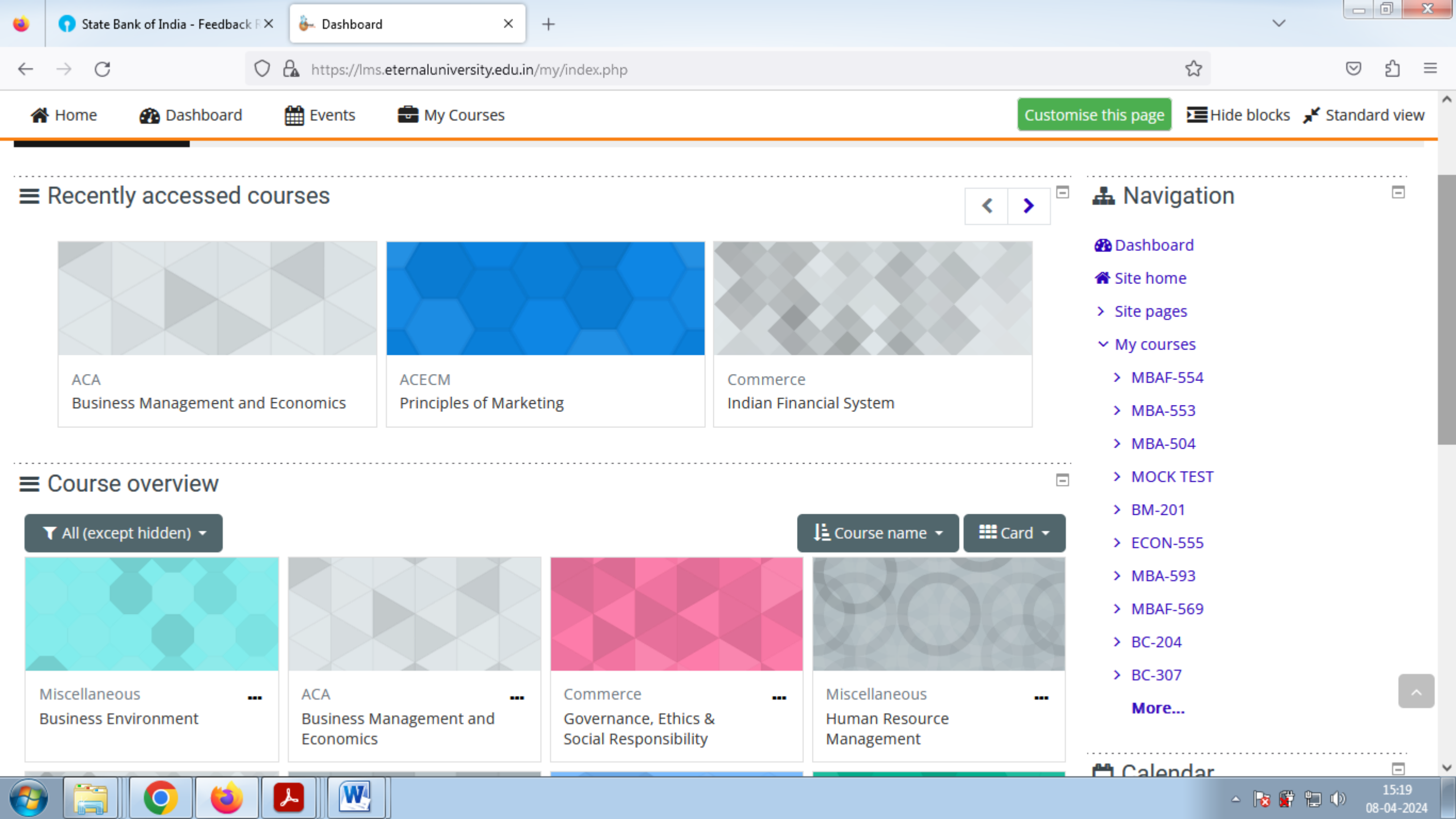
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- ACA Business Management and Economics
- ACECM Principles of Marketing
- Commerce Indian Financial System

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### Course overview

All (except hidden) Course name Card

- Miscellaneous Business Environment
- ACA Business Management and Economics
- Commerce Governance, Ethics & Social Responsibility
- Miscellaneous Human Resource Management

### Calendar

Inbox (188) - praneetchauhan@ x Saral Erp x Dr. Praneet Chauhan : Public p x +


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English (en) Dr. Praneet Chauhan

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**Dr. Praneet Chauhan .**

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chauhanpraneet78@gmail.com

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**Description**

**Birth & Education:** Born in Shimla, Himachal Pradesh on 2<sup>nd</sup> November, 1987. Educated at Gorton Mission School, Kotgarh, Shimla, 2004; GBSSS Shimla, 2006; Chandigarh College of Technology, Landran, Mohali; 2007-2010; College of Horticulture, Dr. YS Parmar University of Horticulture & Forestry, Solan 2010-2013; M.Sc. 2013; College of Horticulture, Dr. YS Parmar University of Horticulture & Forestry, Solan 2014-2018; Ph. D 2018.

**Positions hold:** Joined School of Agriculture, RIMT University, Punjab as Assistant Professor on 1<sup>st</sup> August, 2017. Later he joined as Assistant Professor at Department

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English (en) Dr. Praneet Chauhan

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**Course profiles**

- MOCK TEST
- Mushroom Cultivation Technology
- Disease of Field crops & Their Mgt.
- Detection and Diagnosis of Plant Disease
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- Detection & Diagnosis of Plant Diseases
- Principles of Plant Pathology
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- Epidemiology and Forecasting of Plant Disease
- Post-Harvest Diseases and Their Management

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Browser tabs: Inbox (187) - praneetchauhan@, Saral Erp, PIPath-303: MID SEMESTER EX...

Address bar: Not secure https://lms.eternaluniversity.edu.in/mod/quiz/view.php?id=1650

Navigation: Home, Dashboard, Events, My Courses, This course

## Diseases of Field an ...

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Courses > ACA > PIPath-303 > General > MID SEMESTER EXAMINATION

### MID SEMESTER EXAMINATION

Attempts allowed: 1  
 This quiz closed on Thursday, 4 June 2020, 11:35 AM  
 Time limit: 30 mins  
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## Diseases of Field an ...

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Courses > ACA > PIPath-303

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- MID SEMESTER EXAMINATION
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- Diseases of Field and Horticultural crops II
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**Dr. Mahesh Tripathi**

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**Description**


A highly qualified Assistant professor with a rich experience of more than five years in Teaching and Research in Educational Institutes and Research Institutes, currently serving as Assistant Professor. He also served as research for IIT-Bombay, UAS-Raichur, IIT-Kharagpur and Aligarh College of Engineering & Technology. He received Ph. D degree in Soil and Water Engineering (Agricultural Engineering) from Jawaharlal Nehru Krishi Vishwa Vidyalaya (JNKVV) University, Jabalpur, M.P. M.Tech (Agricultural Engineering) Soil and Water Conservation Engineering, SHUATS, Allahabad. B.Tech. Agricultural Engineering, AAIDU, Allahabad. His research interests include, Water productivity, Water management, Soil and water conservation engineering, Geoinformatics, Nano-technology, Precision Farming, Soil erosion, Agro-meteorology & Climate Change.

**Interests**

- Agricultural Engineering
- Water Management & Geoinformatics

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**Dr. Tajendra Pal Singh .**

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tajendra.singh66198@gmail.com

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**Description**

Dr. Tajendra Pal Singh is a well-qualified professional with a rich experience of more than 5 years in teaching and research in educational Institutes. He is currently serving as Assistant Professor at Department of Food Technology, Dr. Khem Singh Gill Akal College of Agriculture, Eternal University, Baru Sahib. He received his Ph.D. degree in Food Technology from Guru Nanak Dev University, Amritsar, M.Sc. in Food Science and Technology from Gobind Ballabh Pant University of Agriculture & Technology, Pantnagar and B.Sc. Degree in medical from Sardar Bhagat Singh Govt. P.G. Degree College, Rudrapur. He has 15 publications in various national and international journals and 04 conferences to his credit. He has guided 10 B. Tech (Food Tech.) and 04 M.Sc students.


Dr. Tajendra Pal Singh has been associated with Eternal University, Baru Sahib since June, 2018 and has played a major role in upbringing the standard of education. His efforts are commendable and Eternal University considers Dr. Tajendra Pal Singh as the key person to the establishment of Akal Food Safety and Quality Control Laboratory Society. He has taught various subjects in several disciplines such as B. Sc. (Nursing), B. Tech, M. Sc. and Ph.D. (Food Technology).

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**Course profiles**

- Recent Advances in Dairy Science & Technology
- Meat, Fish and Poultry Technology
- Food Microbiology
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- Food Additives and Ingredients
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- General Microbiology
- Dairy Technology
- Industrial Microbiology
- Processing Technology of Legumes and Oilseeds
- Food Microbiology
- Food Chemistry of Macronutrients

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ACA Dairy Technology	ACA Food Additives and Ingredients	ACA Food Chemistry of Macronutrients	ACA Food Microbiology
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## Calendar

April 2024



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## History of Industrial Micro

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# History of Industrial Microbiology

Industrial microbiology came into existence, primarily, based on a naturally occurring microbiological process called **fermentation**. There are many evidences which clearly shows that ancient man knew fermentation process and practiced it more as an art rather than as a science. Early fermentation process practiced by man included the leavening of bread, retting of flax, preparation of vinegar from wine, production of various alcoholic beverages like beer, wine, mead and the production of various fermented foods and milk. Due to invention of microscope, discovery of microorganisms and understanding of their metabolic processes, lead to clear understanding of the fermentation, which paved the way for the development of Industrial Microbiology.

The history of industrial microbiology can be divided into five phases, which are précised in table 1.1 Phase I up to 1900 Alcohol fermentation period, Phase II 1900-1940 Antibiotic period, Phase III 1940-1964 Single cell protein period, Phase IV 1964-1979 Metabolite production period, and Phase V 1979 onward Biotechnology period.

Table 1.1: The phases in the history of Industrial Microbiology

Phase	Main products	Fermenters	Process control	Culture method	Quality control	Pilot plant facilities	Strain selection
I Period before	Alcohol	Wooden upto 1500 barrels capacity	Use of thermometers, hydrometer and heat	Batch	Practically nil	Nil	Pure yeast culture used at some of the breweries

### Strain Improvement

Several options are open to an industrial microbiology organization seeking to maximize its profits in the face of its competitor's race for the same market. The operations in the fermentor may also be improved by its use of a more productive medium, better environmental conditions, better engineering control of the fermentor processes, or it may genetically improve the productivity of the microbial strain it is using. Of all the above options, strain improvement appears to be the one single factor with the greatest potential for contributing to greater profitability.

To appreciate the basis of strain improvement it is important to remember that the ability of any organism to make any particular product is predicated on its capability for the secretion of a particular set of enzymes. The production of the enzymes, themselves depends ultimately on the genetic make-up of the organisms.

Improvement of strains can therefore be put down in simple term as follows:

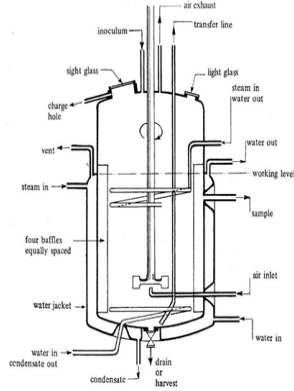
1. Regulating the activity of the enzymes secreted by the organisms
2. Increasing the permeability of the organism so that the microbial products can find their way more easily outside the cell.
3. Selecting suitable producing strains from a natural population
4. Manipulation of the existing genetic apparatus in a producing organism
5. Introducing new genetic properties into the organism by recombinant DNA
6. Technology or genetic engineering

#### Examples of targets for strain improvement

- Rapid growth
- Genetic stability
- Non-toxicity to humans
- Large cell size, for easy removal from the culture fluid
- Ability to use cheaper substrates
- Modification of submerged morphology
- Elimination of the production of compounds that may interfere with downstream processing
- Catabolite derepression
- Phosphate deregulation
- Permeability alterations to improve product export rates
- Metabolite resistance
- Production of additional enzymes and compounds to inhibit contaminant microorganisms

lms.eternaluniversity.edu.in / Fermentor combined

A typical fermentor is an upright closed cylindrical tank fitted with four or more baffles attached to the side of the wall, a water jacket or coil for heating and/or cooling, a device for forcible aeration (known as sparger), a mechanical agitator usually carrying a pair or more impellers, means of introducing organisms and nutrients and of taking samples and outlets for exhaust gases. Modern Fermentors are highly automated and usually have means of continuously monitoring, controlling or recording pH, oxidation-reduction potential, dissolved oxygen, effluent O<sub>2</sub> and CO<sub>2</sub>, and chemical components of the fermentation broth.



**Construction Materials for Fermentors**

A simple batch fermentor may consist of an open tank made of wood, concrete or carbon-steel if contamination is not a serious problem. Stainless steel is therefore normally used for pilot and production fermentors. Laboratory scale fermentors are usually made of Pyrex glass to enable autoclaving. Where a highly corrosive material is fermented, e.g. citric acid, the fermentor should definitely be made of stainless steel.

**Aeration and Agitation in a Fermentor**

Oxygen is essential for growth and yield of metabolites in aerobic organisms. Oxygen must be dissolved in aqueous solution along with the nutrients. Air ordinarily contains only 20% of oxygen, but oxygen is also highly insoluble in water. At 20°C, water holds only about nine







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 <p>ACA Protected cultivation of horticultural crops</p>	 <p>ACA Production Technology for Vegetables and Spices</p>	 <p>ACA Production Technology of fruit crop (4th Deans) ...</p>	 <p>ACA Production Technology of Cool Season Vegetable ...</p>

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Spices	Deans) ...	Vegetable ...
ACA Production Technology of Warm Season Vegetable ...	ACA Organic Horticulture	ACA Commercial vegetable production

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- Fundamentals of Horticulture
- Production Technology for Fruit and Plantation Crops
- Production Technology for Ornamental Crops, MAP and Landscaping

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ACA Landscaping and Ornamental Gardening	
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## Ms. Sabhya Pathania .

### General

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### Mid Term Exam

 Quiz: [HORT 511](#)

Grade: Hidden

Attempt 1: In progress - Monday, 28 September 2020, 4:50 PM

### Practical Exam

 Quiz: [HORT-511 Practical Exam](#)

Grade: Hidden

Attempt 1: In progress - Thursday, 26 November 2020, 6:34 PM

### Final Exam

 Quiz: [Hort 511 Final Exam](#)

Grade: Hidden



Attempt 1: In progress - Thursday, 3 December 2020, 9:15 PM





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[Growth and Development of Horticulture Crops](#)

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### Interests

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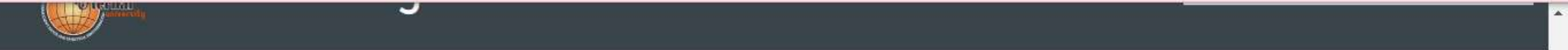
  
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- Subtropical and Temperate Fruit production
- Biodiversity and Conservation of Fruit Crops
- Tropical and Dryland Fruit Production

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**Dr. Pradeep  
Kumar Singh**

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#### Description

Dr. Pradeep Kumar Singh, working as an assistant professor in Botany, Akal College of Basic Sciences. He has published more than 45 research papers and book chapters in different National and International Journals. Dr. Singh's area of specialization in Botany is Mycology and Plant Pathology.

#### Interests


[Mycorrhiza](#) [Plant Pathology](#) [Mycology](#) [Plant - microbe interaction](#)




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Plant Pathology




ACBS  
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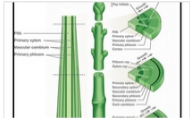
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Phylogeny & Embryology




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ACBS  
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**BOT-533**  
Plant Pathology

**BOT-533: Practical**  
Describe the diseases in following headings and submit online on EU portal.  
Headings: (a) Name of Disease (b) Name of host (c) Name of Pathogen (d) Symptoms & Signs (e) Control Measures (f) Disease Cycle

- White rust of crucifers
- Stem rust of wheat
- Smut of wheat
- Karnal bunt of wheat
- hill bunt of wheat
- Red rot of sugarcane
- Tikka Disease of groundnut
- Late Blight of Potato
- Early Blight of Potato
- Wart Disease of Potato
- Apple Scab
- Citrus Canker
- Blast of Rice
- Brown spot of Rice
- Sheath Blight of Rice
- Sheath Blight of Maize
- Northern Blight of Corn
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- Stalk rot of Maize
- Leaf Curl of Tomato

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**Lecture**  
A general overview of Phytopathology

**Lecture**  
Introduction of Plant Pathology

**Lecture**  
Introduction of Plant Pathology

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Pathogenesis

**Lecture**  
Defense Mechanism of Plants

**Lecture**  
Role of Enzymes in Plant Pathology  
Role of Enzymes in Pathogenesis

**Lecture**  
Disease Forecasting

**Lecture**  
Host Pathogen Interaction

**Lecture**  
Practicals: Rust of Wheat

**Lecture**  
Practicals: Smuts of Wheat

**Lecture**  
Diseases of Rice

**Lecture**  
Diseases of Maize

**Biotechnology in Plant Pathology**

**Plant Virology**

**Important Viral Diseases**

**Gene for Gene Hypothesis**

**Plant Bacteriology**

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Plant Pathology

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End Semester Examination December - 2020

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## Search forums

Advanced search

GO

## Upcoming events

There are no upcoming events  
Go to calendar...

## Recent activity

Activity since Sunday, 31 March 2024, 9:45 AM  
Full report of recent activity...  
No recent activity

## Auto Attendance Block

- Attendance
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# EU-Learning Portal

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Reset page to default | Customise this page | Hide blocks | Full screen

**Dr. Anil Kumar .**  
Preferences  
Edit profile  
anilthakur82@gmail.com


Navigation tabs: About me | Courses | More | **Edit profile**

**General**

Description

Rich text editor toolbar: Paragraph, Bold (B), Italic (I), Bulleted list, Numbered list, Link, Unlink, Undo, Redo, Insert/edit image, Table, Source code

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    - CHEM -591
    - CHEM -525



**Ajar Nath Yadav**

Preferences

Edit profile

ajarbiotech@gmail.com

About me Courses More Edit profile

**Description**


Dr. **Ajar Nath Yadav** is currently working as Head, Department of GPB and Biotechnology, Dr. KSG Akal College of Agriculture, Eternal University, Baru Sahib, Himachal Pradesh, India. Dr. Yadav has 323 publications with h-index 85, i10-index 294, and 20449 citations. Dr. Yadav is the editor of 32 books (Springer, Elsevier, Wiley, Taylor and Francis). Dr. Yadav published 133 research communications.

Dr. Yadav is among **2% world scientist** in 2022 and 2023. Dr. Yadav has got 19 Best Paper Presentation Awards, and one Young Scientist Award (NASI-Swarna Jayanti Purskar). Dr. Yadav received "Outstanding Teacher Award" in 6th Annual Convocation 2018 by Eternal University, Baru Sahib, Himachal Pradesh. Dr. Yadav has a long standing interest in teaching at the UG, PG and PhD level and is involved in taking courses in agriculture microbiology, bacteriology, biosystematics and biodiversity, bioprocess engineering and technology, environmental biotechnology, environmental microbiology, industrial microbiology, microbial biotechnology and techniques in microbiology and biotechnology.

<https://sites.google.com/site/ajarbiotech/>

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**Ajar Nath Yadav**

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  - Research Methodology (RM-598)
  - Ph.D. Entrance Test
  - MOCK TEST
  - Production Technology for Bioagents and Biofertilizer
  - Techniques in Biotechnology-II
  - Bioprocess Engineering and Technology
  - Bio-pesticides and bio-fertilizers
  - Techniques in Biotechnology-I
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  - General Microbiology
  - Biopesticide and Biofertilizers
  - Principles of Microbiology (Suppl)
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  - Food Biotechnology

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English (en) Dr. Ajar Nath Yadav

# EU-Learning Portal

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**ANNOUNCEMENTS** No news items to display

**Recently accessed courses**

PhD Entrance Test

Miscellaneous  
Ph.D. Entrance Test

PhD Entrance Test

Miscellaneous  
Research Methodology (RM-598)

**Course overview**

In progress

ACA ... ACA ... ACA ... ACA ...

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English (en) Dr. Ajar Nath Yadav

# EU-Learning Portal

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**COURSE OVERVIEW**

In progress

ACA  
Agricultural Microbiology

ACA  
Bio-pesticides and bio-fertilizers

ACA  
Biopesticide and Biofertilizers

ACA  
Biopesticides and Biofertilizers

ACA  
Bioprocess Engineering and Technology

ACA  
Environmental Biotechnology

ACA  
Food Biotechnology

ACA  
General Microbiology

Miscellaneous  
MOCK TEST  
0% complete

Miscellaneous  
MOCK TEST 2020

ACA  
Principles of Microbiology (Suppli)

ACA  
Production Technology For Bioagents and ...

Miscellaneous  
Research Methodology

ACECM  
Research Methodology

ACA  
Techniques in

ACA  
Techniques in

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March 2024

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25	26	27	28	29	30	31

**Online users**

1 online user (last 5 minutes)

Ajar Nath Yadav





# Agricultural Microbi ...

Search Courses

Courses > ACA > Micro-101

**Micro-101**

Open all Close all

Instructions: Clicking on the section name will show / hide the section.

- 1 **Notes for UNIT 1-6 - Toggle**  Topic 1
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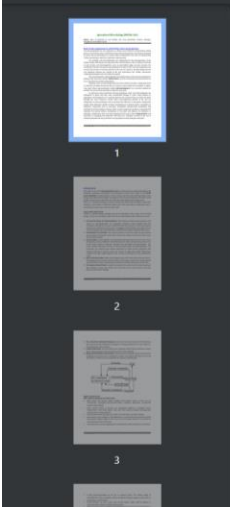
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Unit 3.pdf 1 / 11 100% +



### Agricultural Microbiology [MICRO-101]

**Unit-3: Role of microbes in soil fertility and crop production: Carbon, Nitrogen, Phosphorus and Sulphur cycles**

**Role of microorganisms in soil fertility and crop production**

Soil microorganisms are very important as almost every chemical transformation taking place in soil involves active contributions from soil microorganisms. In particular, they play an active role in soil fertility as a result of their involvement in the cycle of nutrients like carbon and nitrogen, which are required for plant growth.

For example, soil microorganisms are responsible for the decomposition of the organic matter entering the soil (e.g. plant litter) and therefore in the recycling of nutrients in soil. Certain soil microorganisms such as mycorrhizal fungi can also increase the availability of mineral nutrients (e.g. phosphorus) to plants. Other soil microorganisms can increase the amount of nutrients present in the soil. For instance, nitrogen-fixing bacteria can transform nitrogen gas present in the soil atmosphere into soluble nitrogenous compounds that plant roots can utilize for growth.

The microorganisms, which improve the fertility status of the soil and contribute to plant growth, have been termed '**biofertilizers**' and are receiving increased attention for use as microbial inoculants in agriculture.


Similarly, other soil microorganisms have been found to produce compounds (such as vitamins and plant hormones) that can improve plant health and contribute to higher crop yield. These microorganisms (called '**phytostimulators**') are currently studied for possible use as microbial inoculants to improve crop yield.

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Unit 4.pdf 1 / 9 100% +



### Agricultural Microbiology [MICRO-101]

**Unit-4: Biological nitrogen fixation: symbiotic, associative and asymbiotic. Azolla, blue green algae and mycorrhiza**

**Biological nitrogen fixation**

Sustainable agricultural systems employ natural processes so as to achieve acceptable levels of productivity as well as the food quality simultaneously minimizing the adverse environmental impacts. There are several soil fertility factors which also contribute to the sustainable agriculture through the control of the soil borne disease, including increased soil microbial activity leading to the increased competition and increased parasitism within the rhizosphere. Greater emphasis has been placed on the indigenous soil microbes which contribute to the fertility of the soil, increased plant growth as well as the plant protection. Plant growth promoting microbes are capable of promoting the growth of the plants directly as well as indirectly. There are different mechanisms of plant growth promotion such as symbiotic or asymbiotic nitrogen fixation, secretion of various phytohormones including the auxins, gibberellins, cytokinins, production of ACC deaminase for the reduction of the ethylene levels in the roots of the crops which further enhances root length as well as the density, production of siderophores, various lytic enzymes such as the chitinases, cellulases, HCN against the pathogens, production of various water soluble vitamins including niacin, thiamine, riboflavin, pantothenic acid which enhances the resistance to drought and oxidative stresses. The use of the plant growth promoting microbes in agriculture can favor a reduction in use of the chemical fertilizers and can enhance the productivity of the crops in an eco-friendly manner.

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Unit 5.pdf 1 / 6 100% +

**Agricultural Microbiology [MICRO-101]**

**Unit-5: Rhizosphere and phyllosphere**

**Rhizosphere**

The root system of higher plants is associated not only with soil environment composed of inorganic and organic matter, but also with a vast community of metabolically active microorganisms. As living plants create a unique habitat around the roots, the microbial population on and around the roots is considerably higher than that of root free soil environment and the differences may be both quantitative and qualitative.

It is the zone/region of soil immediately surrounding the plant roots together with root surfaces, or it is the region where soil and plant roots make contact, or it is the soil region subjected to influence of plant roots and characterized by increased microbial.

Term "**Rhizosphere**" was introduced for the first time by the German Scientist **Hiltner (1904)** to denote that region of soil which is subjected to the influence of plant roots.

**Starkey (1938)** examined the rhizosphere region of some plant species and demonstrated the effect of root exudates on the predominance of bacterial population in particular and other soil microorganisms in general in the rhizosphere region. Thus, he put forth the concept of "**Rhizosphere effect / phenomenon**"

**FE Clark (1949)**: Coined the term "**Rhizoplane**" to denote the root surface together with

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3	Practical Exam Micro-101 - Toggle	Topic 3
	Practical Exam Micro-101	<input checked="" type="checkbox"/>
4	End Semester Exam Micro-101 - Toggle	Topic 4
	End Semester Exam Micro-101	<input checked="" type="checkbox"/>
5	Practical Exam Micro-101 (18/09/2020) - Toggle	Topic 5
6	MICRO-101 Examination 2021 - Toggle	Topic 6
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	MICRO-101 End Semester Examination (12/08/2021)	<input checked="" type="checkbox"/>

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