B. Voc. in Medical laboratory Technology

(Duration: 3 Years | NCrF – Level 5.5)

as per New Guidelines of UGC: CCFUP (NEP-2020)

PROGRAMME BROCHURE

YEAR- 2023

Contents

About Medhavi Skills University

21st Century Industry and Workspace is changing in a faster and unexpected way. Disruptive Technologies have dramatically transformed the way the work used to work. Especially, the last decade has been highly impactful in accelerating this transformation due to the evolution of technologies like High-Speed Internet, Mobile (4G, 5G), IoT, Cloud Technology, Big Data, etc. The inquisitiveness of the human mind and the path-breaking innovations have started to redefine the Workspace and the Social behavior e.g.; Chatbots handling the customer service seamlessly, Robots synchronously participating in large scale Manufacturing, Ecommerce dominating the retail space, etc.

To deliver to the demand for industrial mobility, the future workforce in the higher education eco-system needs to be groomed differently. Medhavi Skills University (Sikkim) is committed to catering to the need of the hour to prepare the youth to tackle the agility and volatility of the future workspace. To this mission, co-working with leading Industry Partners within and outside of India to design and implement demand-driven programmes embedding On Job Training / Learning in the Industry is our priority. We envision each Medhavian to be the leading face of tomorrow's workspace.

Medhavi Skills University (Sikkim) has been established with the passage of the **Medhavi Skills University, Sikkim Act 2021 in the Sikkim State Legislative Assembly on 24th June 2021.** MSU aspires to establish a pioneering university model where corporates/ industries shall be the stakeholders and influencers in course curriculum design, program delivery, practical skills training, as well as, for providing on-the-job apprenticeship, with the following mission and vision.

WELCOME TO
MEDHAVI SKILLS UNIVERSITY SIKKIM
A UGC recognized State University established with passage of the Medhavi Skills University, Sikkim Act, 2021

RECOGNITIONS AND APPROVALS

LEADING THE FACE OF PROFESSIONAL HIGHER EDUCATION

| 1st University in India to offer (Fully) Learn & Earn Degree with industry | 2nd University in India to partner with DGT for Work Integrated ITI | 2nd University in India to become the Awarding Body of NCVET, MSDE | 1st University in NEI to partner with NSDC International for overseas placement | 1st University in NEI to implement NEP-2020 from AY-2022 |

About Bachelor of Vocation (B Voc.)

It has been a long-felt necessity to align higher education with the emerging needs of the economy so as to ensure that the graduates of higher education system have adequate knowledge and skills for employment and entrepreneurship. Therefore Govt. of India issued a notification for National Skill Qualification Framework (NSQF). Under the National Skill Development Corporation (NSDC), many Sector Skill Councils representing respective industries are being established to develop Qualification Packs (QPs) National Occupational Standard for various job roles in their respective sectors. The University Grants Commission (UGC) had launched a scheme for skill development as a part of higher education, leading to Bachelor of Vocation (B.Voc.) degree with multiple entry and exit points for creating employable graduates.

"Bachelor of Vocation (B.Voc.), a Bachelor level degree specified by UGC under section 22(3) of UGC Act, 1956 and notified in official Gazette of India dated 19th January, 2013 be recognized at par with the other Bachelor level degrees for competitive exams conducted by Union/State Public Service Commission, Staff Selection Commission or other such bodies where the eligibility criteria is "Bachelor Degree in any discipline".

https://www.ugc.gov.in/pdfnews/7966971_UGC-letter-reg-B.Voc.pdf

Eligibility Criteria
Candidates fulfilling any one of the following criteria are eligible for the program:
- 12th Standard Pass
- 10th Standard Pass plus completed 2nd Year of Diploma
- 10th Standard Pass plus completed 3 years of vocational education
- 10th Standard Pass plus 1 year NTC plus CITS plus 1 year work experience in relevant discipline

B.Voc. in Medical Laboratory Technology

Program overview

Medical laboratory technicians play an important role in the healthcare system and are responsible for conducting tests on patients' samples and providing accurate results. With the increasing demand for better healthcare services for a growing population, there is a need for more medical laboratory technicians in India to meet the demand in increasing number of hospitals and clinics in the country. Professionals in this field are required to handle different types of laboratory tests and procedures and can work in hospitals, clinics, research institutes, biotechnology companies, diagnostic centers, and other healthcare establishments.

The **3-year program B. Voc. in Medical Lab. Technology** program provides comprehensive training for future diagnostic professionals. Based on a rigorous curriculum that includes anatomy, physiology, microbiology, biochemistry, and haematology, students gain a solid foundation in the sciences critical to accurate diagnostic testing. This program emphasizes hands-on experience in a clinical setting, allowing graduates to proficiently perform a variety of diagnostic tests and analyses. With a focus on patient-centred care and integration of advanced laboratory technologies, students are able to communicate effectively with patients and healthcare providers, ensuring Collect samples accurately and report results promptly.

Graduates of this program are well prepared to enter diverse careers in hospitals, clinics, research laboratories and diagnostic centres, with opportunities to specialize in areas such as microbiology, pathology and biochemistry. Additionally, this program plays a central role in improving public health by meeting the growing demand for accurate diagnostic services, ultimately delivering better outcomes for patients.

Programme Highlights

- **UGC Approved Degree:** The degree is UGC approved and aligned to National Skill Qualification Framework (NSQF) and National Higher Education Qualification Framework (NHEQF) https://www.ugc.gov.in/NHEQF.aspx

- **Aligned NEP2020:** The programme structure, curriculum and mode of implementation is as per the guidelines of NEP 2020 curriculum and credit framework for UG Programme. https://www.ugc.gov.in/pdfnews/7193743_FYUGP.pdf

- **Equivalence to Any other Bachelor Degree:** B.Voc Degree is recognized at par with the other Bachelor Level Degrees for Competitive Examinations, Employment in Government/private sector, and progression to higher education. https://www.ugc.gov.in/pdfnews/7966971_UGC-letter-reg-B.Voc.pdf

- **Multiple Entry and Multiple Exit (MEME):** The programme offers multiple entry and exit options after completion of every year.

Year of Exit	Total Credits	Awarding Type
Year 1	40	UG Certificate
Year 2	80	UG Diploma
Year 3	120	UG Degree

- **Learning Outcome Based Education (LOBE):** Programmes are designed based on Outcome Based Education framework as per NEP2020, in which an emphasis is placed on an articulated idea of what students are expected to know and be able to do, that is, what skills and knowledge they need to have when they leave.

- **Blended Mode of Delivery:** Different components of the curriculum are delivered with a judicious mix in the blended mode (onsite, online, offline, on the job)

- **On the Job Training (OJT):** The programme provisions the feature of OJT as a part of the curriculum, where the student-trainees get the opportunity to work with reputed industry partners in their field of specialization.
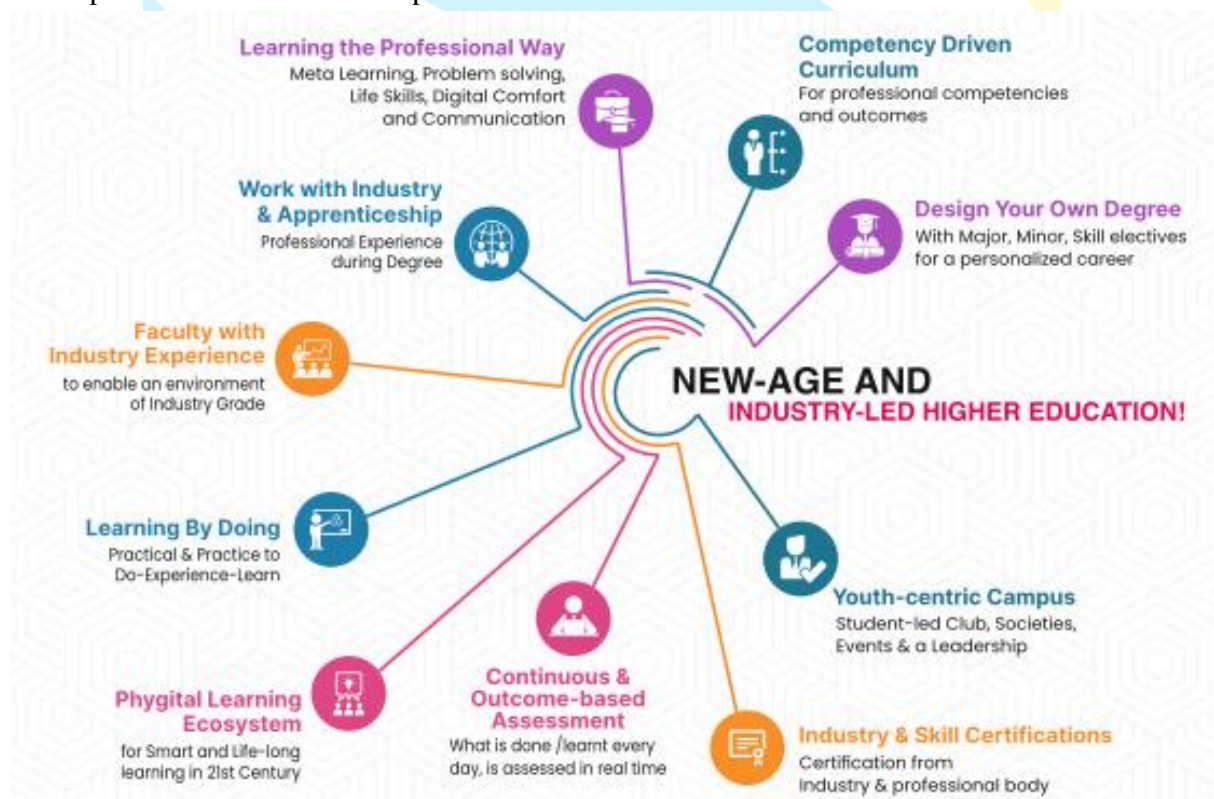
- **Industry Relevant Curriculum:** The courses offered match to the requirement of the industry and prepares the students to overcome Industry-Academic Gap.

- **Continuous Evaluation:** The prorgamme features continuous evaluation in the form of formative and summative assessments. The emphasis on formative assessments is to ensure learning outcomes to be monitored and assessed from Topic level to Module Level to Course Level as the semester is in progress. It also incentivizes the learner to focus on daily learning activity by avoiding the pressure of memorization for the end semester examination only.

- **Employability Skills and Career Counselling:** Students are facilitated with training modules, online/offline sessions, Conferences/Seminars/ Workshops/Panel discussion/ Webinar to be exposed to horizontal and vertical progression through different career specific opportunities.

- **Placement and Progression:** After completion of programmes, the student will be offered assistance for placement in the relevant sector. Alongside, the student will also have multiple options viz.
  - study further in a master's programme specializing in specific domain
  - pursue a career by taking up a job
  - take up an entrepreneurial venture
  - take up a professional or skill development course aimed at specializing, etc.

Career Prospects

This program can open up opportunities for the students in the following carriers:

Entry Level

- Medical Lab Technician
- Medical Coder
- Phlebotomist
- Lab Technician (Microbiology)
- Lab Technician (Pathology)
- Path Lab Technician
- Pathologist Assistant
- Histology Technician

Middle Level

- Laboratory In charge
- Pathologist
- Trainer
- Lab managers
- Medical Technologist

Senior Level

- Laboratory Director
- Laboratory In charge
- Technical Officer
- Chief Technical Officer
- Lab Superintendent
- Senior Technical Officer

Programme Components

The curriculum in each of the years of the programme would be a suitable mix of general education and skill development components matched to the UGC guideline of curriculum and credit framework for Under Graduate Programmes.

Skill Development Components

- The focus of skill development components shall be to equip students with appropriate knowledge, practice and attitude, to become work ready. The skill development components will be relevant to the industry as per its requirements.
- The curriculum will necessarily embed within itself, National Occupational Standards (NOSs) of specific job roles within the industry. This would enable the students to meet the learning outcomes specified in the NOSs.
- The overall design of the skill development component along with the job roles selected will be such that it leads to a comprehensive specialization in few domains.
- The curriculum will focus on work-readiness skills in each of the year of training.
- Adequate attention will be given in curriculum design to practical work, on the job training, development of student portfolios and project work.

General Education Component

- The general education component adheres to the normal senior secondary and university standards. It will emphasize and offer courses which provide holistic development.
- Adequate emphasis is given to language and communication skills.

NEP2020: Curriculum and Credit Framework

The National Education Policy (NEP) 2020 envisages several transformative initiatives in higher education. These include:

- **Introducing holistic and multidisciplinary undergraduate education** that would help develop all capacities of human beings - intellectual, aesthetic, social, physical, emotional, ethical, and moral - in an integrated manner; soft skills, such as complex problem solving, critical thinking, creative thinking, communication skills; and rigorous specialization in a chosen field (s) of learning.

- **Adoption of flexible curricular structures** in order to enable creative combinations of disciplinary areas for study in multidisciplinary contexts that would also allow flexibility in course options that would be on offer to students, in addition to rigorous specialization in a subject or subjects.

- **Undergraduate degree programmes of either 3 or 4-year duration**, with multiple entry and exit points and re-entry options: UG certificate, UG diploma, bachelor's degree, 4-year bachelor's degree (honours)

- **Inclusion of credit-based courses** and projects in the areas of community engagement and service, environmental education, and value-based education.

- **Value-based education** to include the development of humanistic, ethical, Constitutional, and universal human values of truth, righteous conduct, peace, love, nonviolence, scientific temper, citizenship values, and life skills.

- **Lessons in service and participation in community service** programmes to be an integral part of holistic education.

- **Global Citizenship Education and education for sustainable development** to form an integral part of the curriculum to empower learners to become aware of and understand global and sustainable development issues

- **Students to be provided with opportunities for internships** with local industry, businesses, artists, crafts persons, etc., as well as research internships with faculty and researchers at their own or other HEIs/research institutions, so that students may actively engage with the practical side of their learning and, as a by-product, further improve their employability.

- **Reorienting teaching programmes** to ensure the development of capabilities across a range of disciplines including sciences, social sciences, arts, humanities, languages, as well as vocational subjects. This would involve offering programmes/courses of study relating to Languages, Literature, Music, Philosophy, Art, Dance, Theatre, Statistics, Pure and Applied Sciences, Sports, etc., and other such subjects needed for a multidisciplinary and stimulating learning environment.

Credit Requirements and Courses

S No	Course Category	Code	Total Credits	No of Courses	Credit/ Course
1	Major (Core)	MC	24	12	02
2	Major (Core) – Job Roles	MCJR	40	4	10
3	Minor Stream	MS	06	3	02
4	Minor Stream – Field Practice	MSFP	06	1	06
5	Vocation Education & Training	VET	13	1	13
6	Multidisciplinary	MDP	08	2	04
7	Ability Enhancement Courses	AEC	08	2	04
8	Skill Enhancement Courses	SEC	09	3	03
9	Value Added Courses	VAC	06	3	02
	Total Credits		**120**	**27/31**	-

Graduate Attributes

(as per UGC's New Curriculum and Credit Framework for UG Programmes)

The National Higher Education Qualifications Framework (NHEQF) envisages that students must possess the quality and characteristics of the graduate of a programme of study, including learning outcomes relating to the disciplinary area(s) in the chosen field(s) of learning and generic learning outcomes that are expected to be acquired by a graduate on completion of the programme(s). Graduate attributes include learning outcomes that are specific to disciplinary areas relating to the chosen field(s) of learning within broad multidisciplinary/interdisciplinary/ transdisciplinary contexts and generic learning outcomes that graduates of all programmes of study should acquire and demonstrate, as given below.

Specific Learning Outcomes

1. Comprehensive knowledge and coherent understanding of the chosen disciplinary/interdisciplinary areas of study in a broad multidisciplinary context, their different learning areas, their linkages with related fields of study, and current and emerging developments associated with the chosen disciplinary/interdisciplinary areas of learning

2. Practical, professional, and procedural knowledge required for carrying out professional or highly skilled work/tasks related to the chosen field(s) of learning, including knowledge required for undertaking self-employment initiatives, and knowledge and mindset required for entrepreneurship involving enterprise creation, improved product development, or a new mode of organization

3. Skills in areas related to specialization in the chosen disciplinary/interdisciplinary area(s) of learning in a broad multidisciplinary context, including wide-ranging practical skills, involving variable routine and non-routine contexts relating to the chosen field(s) of learning.

4. Capacity to extrapolate from what has been learned, translate concepts to real-life situations and apply acquired competencies in new/unfamiliar contexts, rather than merely replicate curriculum content knowledge, to generate solutions to specific problems.

Generic Learning Outcomes

1. Complex problem-solving
2. Critical thinking
3. Creativity
4. Communication Skills
5. Analytical reasoning/thinking
6. Research-related skills
7. Coordinating/collaborating with others
8. Leadership readiness/qualities
9. Learning how to learn skills
10. Digital and technological skills
11. Multicultural competence and inclusive spirit
12. Value inculcation
13. Autonomy, responsibility, and accountability
14. Environmental awareness and action
15. Community engagement and service
16. Empathy

Program Outline

UG Certificate in Medical Laboratory Technology | NCrF – 4.5

S.No	Subject Name	Course Type	Credits	Course Category
	SEMESTER 1			
1	Anatomy & Physiology of Human Body	Theory	2	MC-1
2	Basics of Chemistry	Theory	2	MC-2
3	Science and World	Theory	4	MDP-1
4	Professional Skills (Career Skills)	Practical	3	SEC-1
5	Job Role – 1	OJT	8	MCJW-1
			19	

S.No	Subject Name	Course Type	Credits	Course Category
	SEMESTER 2			
1	Basics of Biochemistry	Theory	2	MC-3
2	Concepts of Microbiology & Pathology	Theory	2	MC-4
3	Employability Skills (Basics)	Theory	2	VAC-1
4	Professional Skills (Team Skills)	Practical	3	SEC-2
5	Communication Skills (English)	Practical	4	AEC-1
6	Job Role – 2	OJT	8	MCJW-2
			21	

UG Diploma in Medical Laboratory Technology | NCrF – 5

		SEMESTER 3		
S.No	**Subject Name**	**Course Type**	**Credits**	**Course Category**
1	Clinical aspects of Biochemistry	Theory	2	MC-5
2	Clinical aspects of Pathology	Theory	2	MC-6
3	Systemic Microbiology	Theory	2	MC-7
4	Introduction to Contemporary Social Problems	Theory	4	MDP-2
5	Universal Human Values	Theory	2	VAC-2
6	Job Role – 3	OJT	8	MCJR-3
			20	

		SEMESTER 4		
S.No	**Subject Name**	**Course Type**	**Credits**	**Course Category**
1	Concepts of Haematology	Theory	2	MC-8
2	Introduction to Diagnostic Microbiology	Theory	2	MC-9
3	Concepts of Blood Transfusion	Theory	2	MC-10
4	Leadership and Management Skills	Practical	3	SEC-3
5	Entrepreneurship Orientation	Theory	2	VAC-3
6	Job Role – 4	OJT	8	MCJR-4
			19	

B.Voc in Medical Laboratory Technology | NCrF – 5.5

S.No	Subject Name	Course Type	Credits	Course Category
SEMESTER 5			

S.No	Subject Name	Course Type	Credits	Course Category
1	Concepts of Histopathology & Cytology	Theory	2	MC-11
2	Business Communication	Theory	4	AEC-2
3	Minor Stream	Theory	6	Minor
4	Job Role – 5	OJT	8	MCJR-5
			20	

S.No	Subject Name	Course Type	Credits	Course Category
SEMESTER 6			

S.No	Subject Name	Course Type	Credits	Course Category
1	Laboratory Law and Ethics	Theory	2	MC-12
2	Job Role – 6	OJT	8	VET
3	Project Work	Practical	5	VET
4	Minor Stream – Field Practice	OJT	6	MSFP
			21	

Electives

MAJOR CORE (JOB ROLES) – (MCJR) - 48 Credits

Year-1 (Anyone to be chosen for Job Role 1, 2)

- General Duty Assistant
- Home Health Aide
- Patient Care Assistant
- Health Worker
- Home Health Care
- Hospital Front Desk Coordinator
- Nursing Assistant
- Bedside Assistant
- Domestic Care Attendant

Year-2 (Anyone to be chosen for Job Role 3,4)

- Blood Collection Assistant
- Phlebotomist

Year-3 (Anyone to be chosen for Job Role 5,6)

- Medical Lab Technician

MINOR STREAM – (MS)- 12 Credits

- Design Thinking & Innovation
- Community Development
- Sustainable Waste Management
- Teaching and Learning
- Digital Fluency and Applications
- Accounting
- Industrial Management
- Project Management
- Customer Service
- Marketing and Sales
- Servicing and Maintenance
- Organizational Leadership

Role of Industry Partner

This program is run in partnership with the Industry, where the Industry plays an important role. They are responsible for providing the following:

- Relevant inputs for the industry aligned curriculum development
- On-the job training to the student trainees in the relevant job roles
- Regular performance assessment and feedback in agreed format
- Classroom setup for student trainees to attend classes conducted by MSU
- Expert session/master class by industry experts
- Work experience letters/ certificates to the Student Trainees upon completion of the training

Mode of Delivery

In this skill embedded program, a great deal of flexibility is required by the learner so that they can learn at their own pace, as well as have structured learning experience. Hence the following mode of learning delivery is adopted:

For Theory based learning

- Theoretical learning will be delivered in a hybrid mode, i.e Online, and Offline.
- All students will also access structured self-paced learning experience through the Advanced Learning Management System (ALMS) of the University.
- Engaging and interactive modules will be available to by logging into the ALMS through Mobile or Laptop.
- Live classes (Offline & Online) will be conducted by the designated faculty.

For Practical based learning

- Practical learning will be done in the Workshop/Labs as per the requirement
- Specific practical assignments and projects also contribute to practical learning
- On the Job Learning as a mode of practical learning will be done at the Industry/Field Activity under the guidance of Industry Experts
- Student will get a chance to learn the specifics of different Jobroles, while progressing in the chosen Major (specialization).
- During OJT, student not only learn the Core Skills related to specialization, but also improves on different aspects of inter and intra personal skills, and employability skills.

Assessments

- Assessments will be in line with the UGC-recommended
  - Learning Outcome Based Education (LOBE) model
  - Continuous assessment and feedback mechanisms
  -
- The Theoretical assessment will be done through:
  - Topic and module level quizzes and assessments
  - End-of-term tests via online/offline, proctored assessment papers
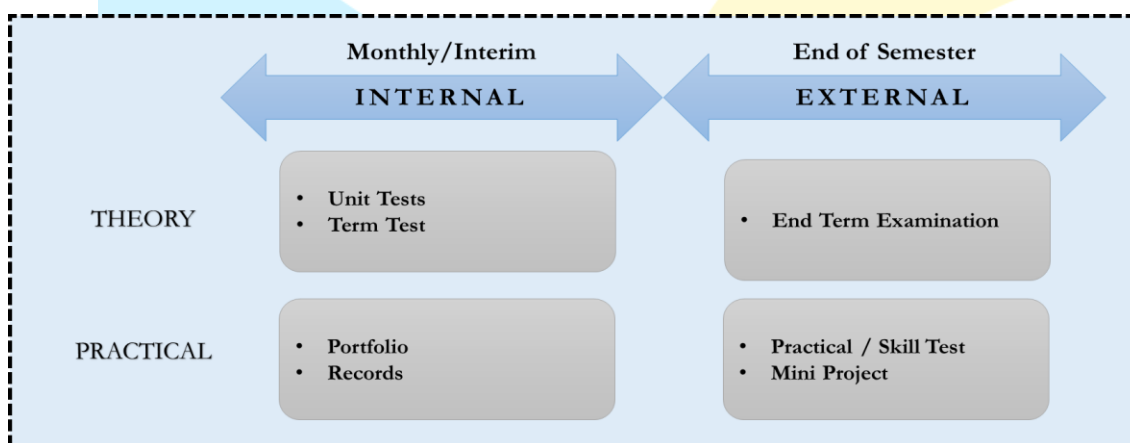
- The Practical Assessment will be carried out through:
  - Periodic evaluation of Record Books and Portfolio
  - End Term Assessment will be conducted through Skill Test or Mini Project
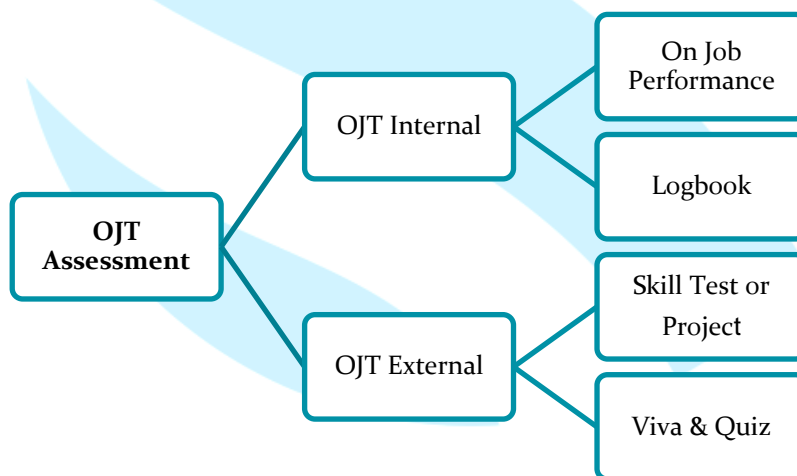
Other Details

Result Publication

Result Declaration is an important activity, and we ensure:

- Timely Result Publication within 30 to 45 Days of End Term Evaluation
- Transparency while calculation and declaration of result
- Established process for revaluation and re-examination.

The Result is shared with each student via email as well as on the LMS. The Grade sheet is also shared on the LMS at the end of the Term.

Academic Bank of Credits (ABC)

Academic bank of credits (ABC) refers to the system facilitated by UGC that allows students to accumulate and store academic credits earned from various educational experiences and institutions. These credits can typically be transferred and applied towards degree programs or certifications at other institutions. This makes it easier for individuals to continue their education or switch between educational institutions while maintaining progress towards their academic goals.

MSU has registered with the National platform and ensures all students have an account in the ABC and the credits earned by students during their course of study are duly updated.

Frequently Asked Questions (FAQ)

1. Is Medhavi Skill University UGC recognised?

   Yes. Medhavi Skills University (MSU) is UGC recognised. Details of all the Recognition and Affiliation is available in https://www.msu.edu.in/recognition-and-approvals/

2. How MSU is different than any other university?

   MSU being a skill focused university emphasises more on Practical Skills through its competency-based curriculum accommodating 70% (approx..) of its curriculum to be aligned to Industry relevant skills. The On Job Training (OJT) and Experiential Learning at the real Industry setups being an integral part of the education while being embedded with blended learning models further assures the job-readiness of the student.

3. What are some of the key values MSU aspires to deliver to the students?

Assuring Employability, Career Progression and Life Long Learning facilitation

4. Is OJT integrated degree valid?

Yes. In order to improve the employability factor during higher education, UGC has formulated special framework for degree with clear guidelines for integration of Skill Component/Industry Skills through OJT/Apprenticeship/Internship. The following guidelines may be referred for more clarity.

https://www.ugc.gov.in/pdfnews/8508026_guidelines-on-b-voc_final.pdf

https://www.ugc.gov.in/pdfnews/9105852_ugcguidelines_ApprenticeshipInternship.pdf

5. Is this programme compliant to new guidelines of NEP2020?

Yes. The approach to development of curriculum and execution of the programme includes all the features as per the guidelines of Curriculum and Credit Framework for Undergraduate Programmes (CCFUP) of UGC published in December 2022. https://www.ugc.gov.in/pdfnews/7193743_FYUGP.pdf

6. Can I pursue 2 Specialisations during my Degree?

Yes. Along with the Major specialization, the student has an option to choose a Minor from the list of elective tracks.

7. Is B Voc as a degree valid for applying to any Government / Private Job?

Yes. Please refer to the letter establishing the equivalence of B Voc to any other UG degree. https://www.ugc.gov.in/pdfnews/7966971_UGC-letter-reg-B.Voc.pdf.

8. Is Apprenticeship/Internship Embedded Degree Programme (AEDP) as a degree valid for applying to any Government / Private Job?

Yes. Please refer to Point no. 2, Page 8 of the following UGC guidelines on AEDP

https://www.ugc.gov.in/pdfnews/9105852_ugcguidelines_ApprenticeshipInternship.pdf

9. How the Examination is conducted?

For monitoring of learning outcomes, MSU provisions continuous assessment for all the internal component on its Advanced Learning Management System (ALMS), where the External Component is evaluated through Proctored Setup.

10. How many days does it take for publication of Results?

It will take 15-45 Days (from the last date of Examination) for the publication of results.

11. Is MSU registered in Academic Bank of Credits (ABC) - National Academic Depository (NAD).

Yes. MSU is registered in ABC-NAD.
Students of MSU can access their Credit Points earned in their ABC Account after publication of result in every semester.

12. I don't have an ABC ID. Can I enrol into the programme?

Yes. You can enrol in MSU's programme.
In case you don't have the ABC ID, MSU's Student Experience Manager will help in creating the ID after the commencement of classes.

Contact Information

For any query related to MSU, contact can be established via

- University's website **www.msu.edu.in**
- Email Id: **contact@msu.edu.in**
- Phone no: **91 9874875876**

Our Presence

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