

TEACHING PRACTICES ACTIVITY DESIGN

1. Basic Information / Name of learning session	Laboratory work, Microbiology
2. Learning objectives in combination with WP3 learning modules /outcomes	Learning objective = reflect on successful and unsuccessful experiences. Students follow instructions to learn about bacteria while experimenting and using problem-based learning methods. 1. Successful isolation of bacteria Learners will be able to successfully isolate bacterial colonies from various samples using aseptic techniques. This includes understanding sampling procedures, preparation of culture media, and application of streaking methods to obtain pure cultures. The outcome is the ability to handle laboratory equipment safely and maintain contamination-free working conditions. 2. Grafting onto media Learners will develop practical skills for inoculating different types of culture media with bacterial samples. They will understand the selection of appropriate growth media based on bacterial nutritional and environmental requirements. The outcome is to master precise transfer techniques and ensure optimal conditions for bacterial growth. 3. Antibigram production Learners will be able to prepare and interpret antibiograms to determine bacterial resistance and susceptibility to various antibiotics. This includes performing the disc diffusion method (Kirby-Bauer test) or other standard procedures, measuring inhibition zones, and analysing results according to standard guidelines. The outcome is to understand the importance of antimicrobial stewardship and guide effective treatment strategies. 4. Gram staining Learners will be able to perform the Gram staining technique to differentiate between Gram-positive and Gram-negative bacteria. They will understand the theoretical basis of the staining procedure, prepare samples properly, apply reagents in the correct sequence, and interpret the results under a microscope. The outcome is to gain practical diagnostic skills for basic bacterial classification. 5. Immersion microscopy Learners will develop the ability to use an oil immersion objective to observe bacteria at high magnification. They will learn to adjust the microscope, apply immersion oil correctly, and handle slides safely. The outcome is to achieve clear, high-resolution observations of bacterial morphology, which supports accurate identification. 6. Identification of the bacterium Learners will be able to identify bacteria using a combination of morphological, biochemical, and staining methods. They will integrate information from culture characteristics, Gram staining, microscopic examination, and antibiograms. The outcome is to interpret laboratory data critically and reach an accurate

	identification of bacterial species relevant to diagnostic microbiology.
3. Didactic methods to decide upon (derived from the WP 3 learning modules)	• Problem-Based Learning (Students work on real-world problems) Preferred! • Lecture-Based (Teacher explains key concepts) • Discussion-Based (Class debate, seminar style) • Collaborative Learning (Group work, peer teaching) • Experiential Learning (hands-on activities) • Blended learning (Combination of traditional and digital resources)
4. Teaching strategies	• Direct instruction (Teacher-led presentation and explanation) • Peer learning (students teaching and learning from each other)
5. Materials & Resources	• Hands-on materials (experimental material) • Online platforms (Google Forms) • Assessment tools (quiz)
6. Lesson´s content, theme description and structure	Introduction /theme description • warm-up activity • learning objectives and relevance Main Activity, Content and structure • Teachers description of a „problem“ to be solved, explanation and demonstration (teacher´s input) • Student-centered activities (group work, discussions, projects) • Hands-on practice Reflection & Discussion • Class discussion Conclusion • Summary of lesson results
7. Assessment & evaluation	• Teacher Observation (Class participation, engagement, behavior) • Self-Assessment (Students reflect on their learning progress) • 70% of teachers/trainers are satisfied • 70% of learners are satisfied
8. Teacher´s expected outcomes and experience and reflection afterwards	• Expected student response: Good participation, students follow the instructions and learn by testing the methods themselves. • Potential challenges & solutions: Selected microorganism does not grow. • Adaptations for learners with special needs: Extra support • Adaptions for different VET settings (dual system training setting, schoolbased VET, etc) • Actual student engagement & participation? Students work on their own. • What worked well? Student were interested in subject. • What could be improved? Forms to fill in experimental data.