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|----------------------------------|--|-------------------------------|
| Form: Course Syllabus | Form Number | EXC-01-02-02A |
| | Issue Number and Date | 2963/2022/24/3/2 5/12/2022 |
| | Number and Date of Revision or Modification | 2/(10/12/2023) |
| | Deans Council Approval Decision Number | 50/2023 |
| | The Date of the Deans Council Approval Decision | 26/12/2023 |
| | Number of Pages | 06 |

| | | |
|-----|--|--|
| 1. | Course Title | Clinical practicum in above knee orthoses |
| 2. | Course Number | 1833347 |
| 3. | Credit Hours (Theory, Practical) | 1 (Practical) |
| | Contact Hours (Theory, Practical) | 4 hours per week (64 hours) |
| 4. | Prerequisites/ Corequisites | 1833322 or concurrent |
| 5. | Program Title | Bachelor of Science Degree in Orthotics and Prosthetics |
| 6. | Program Code | 1803 |
| 7. | School/ Center | Rehabilitation Sciences |
| 8. | Department | Orthotics and Prosthetics |
| 9. | Course Level | Undergraduate/ Third year |
| 10. | Year of Study and Semester (s) | 2025/2026, First semester |
| 11. | Other Department(s) Involved in Teaching the Course | NA |
| 12. | Main Learning Language | English |
| 13. | Learning Types | <input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online |
| 14. | Online Platforms(s) | <input checked="" type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams |
| 15. | Issuing Date | 28/9/2025 |
| 16. | Revision Date | 28/9/2025 |

17. Course Coordinator:

| | |
|---|-------------------------------------|
| Name: Houshang Ranjbar | Contact hours: Monday 12:30 – 13:30 |
| Office number: 529 | Phone number: 5355000/ 23245 |
| Email: h.ranjbar@ju.edu.jo | |



18. Other Instructors:

Name:

Office number:

Phone number:

Email:

Contact hours:

Name:

Office number:

Phone number:

Email:

Contact hours:

19. Course Description:

This course aims to provide students with a clinical training on how to fabricate different types of above knee orthoses which are most frequently used. An emphasis will be given

on knee ankle foot orthoses for the treatment of patients with neurological diseases.

Students will also learn how to fine-tune such devices to the daily needs of the

patients. In addition, the course is focused to build students' capacity in decision making

and evidence-based practice.

20. Program Intended Learning Outcomes: (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

A- Aims:

1. This course aims to provide students with a clinical training on how to fabricate different types of above knee orthoses, which are most frequently used.

2- Students must be able to work independently throughout all stages of fabricating an above knee orthosis within a certain time, limit.

3- Students must be able to show a professional attitude towards their patients as well as colleagues in a clinical



21. Course Intended Learning Outcomes: (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

| CILOs | JNQF | PILOs | | | | | | | | | |
|--|-------------------|-------|---|---|---|---|---|---|---|---|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1. Develop the basic knowledge of the AK orthoses fabrication | <i>Knowledge</i> | | X | | | | | | | | |
| 2. Recognize normal and pathological gait patterns that could be supported by Above knee orthosis. | <i>Knowledge</i> | X | | | | | | | | | |
| 3. Ability to understand the orthotics gait and its deviations. | <i>Knowledge</i> | | X | | | | | | | | |
| 4. Develop ability of assessing, prescribing and providing appropriate KAFOs. | <i>Skills</i> | | | | | X | | | | | |
| 5 Communicate with patient or patient's family to facilitate and improve rehabilitation process. | <i>Skills</i> | | | | | | X | | | | |
| 6. Develop ability to use new techniques and materials are used in AKOs fabrication | <i>Competence</i> | | | | | | | | | | X |
| 7. Demonstrate training activities for patients with KAFOs. | <i>Competence</i> | | | | | | | X | | | |
| 8. Prescribe the appropriate device for patient according to gathered information. | <i>Skills</i> | | | | | | X | | | | |
| 9. Recognize the causes of selection the special and certain orthosis for lower limb patients. | <i>Competence</i> | | | | | | | | | X | |
| 10. Demonstrate how to be fully engaged with the patients and the importance of the clinical assessment in orthotic decision-making. | <i>Competence</i> | | | | | | | X | | | |



22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

| | O&P |
|---------------------|---|
| Knowledge | <p>1. Develop and integrate knowledge from foundational courses; including basic sciences, medical sciences, and research methods, to reflect on the practice of rehabilitation sciences.</p> <p>2. Demonstrate knowledge of skills, techniques, therapeutic modalities, and contemporary trends in orthotic and prosthetic practice.</p> |
| Skills | <p>3. Apply the skills of managing health practice (i.e. prosthetics and orthotics) in different environments and for different patients.</p> <p>4. Perform appropriate examinations and evaluations of patients, taking into account personal and environmental factors across diverse clinical settings.</p> <p>5. Develop constructive methods for utilizing the appropriate equipment, materials, components, and technologies in constructing prosthetic and orthotic devices</p> <p>6. Plan, develop, and implement treatment plans appropriate for each patient according to their age and needs within a broad and continuous series of necessary healthcare treatment plans.</p> |
| Competencies | <p>7. Compose effective oral and written communication for clinical and professional purposes including the use of information technology resources</p> <p>8. Operate within interprofessional teams of healthcare providers, clients, communities, and organizations across traditional and emerging practices. While concurrently illustrating the qualities of a lifelong learner, apply ethical principles to promote inclusion, participation, safety, and wellbeing for all clients.</p> <p>9. Apply leadership and management skills to advance Jordan and the global community scientifically, socially, and technologically in rehabilitation sciences.</p> <p>10. Generate scientific research that advances rehabilitation practices locally and globally.</p> |

**23. Topic Outline and Schedule:**

| Week | Topic | Student Learning Outcome | Learning Methods (Face to Face/Blended/ Fully Online) | Platform | Synchronous / Asynchronous Lecturing | Evaluation Methods | Resources |
|---------|---|--------------------------|---|----------|--------------------------------------|--------------------|-----------|
| 1 - 2 | Patient assessment & casting | 1,2,3,4,5,7, 9 | Face to face | Moodle | | Evaluation form | Rubric |
| 3 - 4 | Positive rectification | 1,2,3,4,6 | Face to face | Moodle | | Evaluation form | Rubric |
| 5 | Plastic dropping & Trimming | 1,2,3,4,6 | Face to face | Moodle | | Evaluation form | Rubric |
| 6 - 7 | Orthosis fabrication | 3,5,6,7 | Face to face | | | Evaluation form | Rubric |
| 8 | Fitting check | 1,2,3,5,7, 8,9,11 | Face to face | | | Evaluation form | Rubric |
| 9 | Riveting & joint fixation & Padding & final shaping | 3,5,6 | Face to face | | | Evaluation form | Rubric |
| 10 | Oral exam | 1,2,3,8,11 | Face to face | | | Exam | Rubric |
| 11 | Introduction to KO & HO | | Face to face | Moodle | | Written exam | |
| 12 - 13 | Shoe insert installation | 2,3,4,6 | Face to face | | | Evaluation form | Rubric |
| 14 | Written exam | 1,2,3,5,7, 8,9,11 | Face to face | | | Written exam | |

24. Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:



| Evaluation Activity | Mark | Topic(s) | SLOs | Period (Week) | Platform |
|---------------------|------|-----------------------------------|----------------|---------------|--------------|
| First project | 20 | (Assessment + Casting) | 1,2,3,4,5,7,9 | 1- 2 | Face to face |
| Mid exam | 30 | Orthotic fabrication + Assembling | 3,5,6,7 | 7 - 10 | Face to face |
| Final exam | 50 | fitting + written exam | 1,3,4,6,8,9,11 | 11 - 14 | Face to face |

25. Course Requirements:

Lab coat

Copping (indelible) pencil

Retractable knife

Blind scissors

Tailor measuring tape

Marker pen

26. Course Policies:

- Attendance will be taken periodically throughout the semester.
- Students are expected to attend and actively participate in all classes.
- Students are expected to be on time.
- When the student is unable to attend class, it is a courtesy to notify the instructor in advance using either e-mail.
- Repeated tardiness or leaving early will not be accepted.
- Students who miss class (or any portion of class) are responsible for the content. Any student who misses a class has the responsibility for obtaining copies of notes, handouts, assignments, etc. from class members who were present. If additional assistance is still necessary, an appointment should be scheduled with the instructor. Class time is not to be used to go over material with students who missed class(es).
- An absence of more than 15% of all the number of classes, which is equivalent of (2) classes, requires that the student provides an official excuse to the instructor and the dean.
- If the excuse was accepted the student is required to withdraw from the module.
- If the excuse was rejected the student will fail the module and mark of zero will be assigned as suggested by the laws and regulations of the University of Jordan. Please refer to pages 133, 134 of



the student handbook.

B- Absences from exams and handing in assignments on time:

- The instructor will not do any make-up exams.
- Exceptions for make-up exams and late submission of class assignments will be made on a case-by-case basis for true personal emergencies that are described as accepted by the regulations of UJ (e.g., documented medical, personal, or family emergency).
- Make-up exams will be arranged if justifications for missing the exam satisfy the above. It is the student's responsibility to contact the instructor within 24 hours of the original exam to schedule a make-up session. A make-up exam should be taken within a week from the original exam date, unless the student can provide documentation that makes meeting that deadline impossible; otherwise, the recorded score for that exam for the student will be a zero.
- Late assignments will not be accepted and submission of assignments (due to unjustified absence from class) by other students will not be accepted regardless of how much work the student put into its preparation.

C- Health and safety procedures:

- Students will be in direct contact with patients during this course.
- Students are expected to use any heavy tools or equipment that might impose health and safety issues during this course.
- Students should work safely, including being able to select appropriate hazard control and risk management, reduction or elimination techniques in a safe manner in accordance with health and safety legislation.
- Students should understand the importance of and be able to maintain confidentiality.
- Students should understand the importance of and be able to obtain informed consent.
- Students should know the limits of their practice and when to seek advice or refer to another professional

D- Honesty policy regarding cheating, plagiarism, misbehavior:

- Students are expected to observe all University guidelines pertaining to academic misconduct.
- Any work submitted by a student for academic credit must be the student's own work. Submission of work taken directly from another source (e.g., book, journal, internet, clinic forms, or another student work) will be considered plagiarism and the student/group will get a zero grade for that work if part of an assignment. In addition, if copying occurred, both the student who copied the work and the student who gave material to be copied (if applicable) will receive a zero for the assignment.
- Students are expected to do work required for assignments on their own. Asking other instructors at the JU clinic or the staff, or other students to assist in or do any part of the assignment for them will negatively affect their grade on that assignment. The course instructor is the person the student needs to talk to if s/he has any difficulties pertaining to an assignment or project and is strongly encouraged to schedule an appointment with the instructor if such difficulties arise during the semester.
- Course materials prepared by the instructor, together with the content of all lectures and review sessions presented by the instructor are the property of the instructor. Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited.



- Any forms of academic misconduct will be handled according to the University of Jordan guidelines.

E- Grading policy:

Grading for this course will be determined based upon the accumulation of points for variety of assignments and exams. All work will be evaluated on completeness, organization, clarity of information, and the integration and application of the material.

F-Available university services that support achievement in the course:

The University of Jordan provides many services to support social, health, and mental well-being of students in general and students with disabilities in specific. Students are advised to visit the Faculty of Students Affairs to learn more about those services. If you are a student with a disability for which you may request accommodations, please notify the staff of Services for Student with Disabilities (Faculty of Students Affairs) as soon as possible. Please also contact the instructor as soon as possible (email is acceptable) so the appropriate accommodations for this course can be made.

27. References:

A- Required book(s), assigned reading and audio-visuals: checking the E- learning (Mood) weekly

B- Recommended books, materials, and media:

- Lower Limb Orthotics, New York University.
- Michelle M.Lusard, ‘Orthotics & Prosthetics in Rehabilitation’, 1st edition, ISBN 0-7506-9807,2000.
- Edelstein JE., "Prosthetic & Orthotic gait", First edition, Churchill Livingstone, 1990
- John D. Hsu, AAOS ATLAS OF ORTHOSES AND ASSISTIVE DEVICES, FOURTH EDITION
ISBN: 978-0-323-03931-4, 2008

28. Additional information:

Students will not be allowed to enter the workshop without being well equipped and wearing their lab coats!

Name of the Instructor or the Course Coordinator:
Houshang Ranjbar

Signature:

Date:
28/9/2025

Name of the Head of Quality Assurance Committee/
Department

Dr. Mahmoud Fataftah

Signature:

MF

Date:

.....

Name of the Head of Department

Dr. Mahmoud Fataftah

Signature:

MF

Date:

.....

Name of the Head of Quality Assurance Committee/

Signature:

Date: 2/11/2025



School or Center

.....Dr. Lara Khlaifat.....

Name of the Dean or the Director

.....

.....LK

Signature:

.....LK

Date: 2/11/2025



Rubric

Clinical practicum in AKO

(Project 1 – Assessment – Casting 30 marks)

| No | Name | Assessment | | | | | Measurements & Casting | | | | | Total |
|----|------|----------------------|-------------------------------|-------------------|-------------------|----------------------------|-------------------------|-------------------------------|------------------------------|------------------|-----------------|-----------|
| | | 15 | | | | | 15 | | | | | |
| | | Subjective History 1 | General Physical Assessment 6 | Range of Motion 3 | Muscle Strength 2 | Treatment Planning (P&O) 3 | Measures and Markings 4 | Casting angle Hand position 4 | Casting coverage & tension 3 | Required tools 1 | Negative mold 3 | Total 30% |
| 1 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | |

Assessment 15marks

Subjective History 1mark

If there is no any recorded history = 0

General Physical Assessment 6 marks

Any students should do the all necessarily tests to have complete assessment and find any things may change the orthotic intervention. Focus should be on following:

Stability of any involved joints



Painful or sensitive areas

Limitation, contractures or deformity of joints (Thomas test, Silfverskiold test, Ant.& post. drawer test and

Length leg discrepancy (LLD)

For any missing test or incorrect application, you can decrease one mark.

Range of Motion 3marks

Aim of this test is finding of ability of patient to do active motion, any available limitations or contractures in affected side, unaffected side and also upper limbs. So For any missing test or incorrect application, you can decrease one mark.

Muscle Strength 2marks

Aim of this test is finding of any available limitations, weaknesses and contractures in affected side, unaffected side and also upper limbs. So For any missing test or incorrect application, you can decrease one mark.

Treatment Planning (P&O) 3marks

According to collected information any student should be able to prescribe the device and make plan for fabrication.

Excellent = 3, Good = 2, Acceptable = 1 and wrong = 0

Measurements & Casting 15marks

Measures and Markings 4

Any student must mark all special landmarks and do the all-necessary measurements in affected side, unaffected side and record them in measuring sheets. For any missing part or incorrect application, you can decrease one mark.

Casting angle (Hand position) 4marks

Casting should be done in correct way and professional manner so they should apply the enough forces in correct places, save the joint in appropriate position and try to do not change the original shape of limb.

For any incorrect position you can decrease one mark.



Casting coverage & tension 3marks

Plaster should cover the involved limb length smoothly and completely without any opening and weak area.

If there is any opening or weak areas or uncompleted coverage you can decrease one mark.

Required tools 1mark

Students should be ready for casting and prepare all tools before casting.

Negative mold 3marks

Negative should be enough strong and smooth internally with acceptable length and dimensions.

Excellent = 3, Good = 2, Acceptable = 1 and unacceptable = 0



Clinical practicum in AKO

(P2- KAFO assembling 20 marks)

| No | Name | KAFO assembling | | | | | | Sum |
|----|------|-----------------|---------------------|-----------|------------------|--------------|-------------|-----|
| | | 20 | | | | | | |
| | | AFO alignment 3 | Uprights position 3 | Bending 5 | Knee alignment 5 | Ankle axis 2 | Knee axis 2 | |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |

Fabrication 10 marks

Any Student is expected to check the distal & proximal circumferences and cut the pattern to make orthosis. Depends on the patient's age, weight and activity level, students should choose the correct thickness and best type of thermoplastic. Drop the plastic in correct way and avoiding of any wrinkle creation. Check the suction to remove the all air



Cut the all-excessive material

Strength 5 marks

| Strength 5marks | | | Mark |
|------------------------|----------------------------------|-------------------|----------|
| Stable orthosis | correct & enough thickness | equal thickness | 5 |
| Stable orthosis | correct but not enough thickness | equal thickness | 2 |
| Stable orthosis | correct & enough thickness | unequal thickness | 2 |
| Unstable orthosis | incorrect & enough thickness | unequal thickness | 0 |

Orthosis should be trimmed smoothly, symmetrically and shaped as standard without any sharp edges.

Symmetry 3marks

| Symmetry 3 marks | | | Mark |
|-------------------------|---------------|----------------|----------|
| Symmetrical shape | Equal width | Equal height | 3 |
| Unsymmetrical shape | Equal width | Equal height | 1 |
| Symmetrical shape | Equal width | Unequal height | 1 |
| Unsymmetrical shape | Unequal width | Unequal height | 0 |

Smoothing 2marks

If there are any sharp edges = **0**

Height 5 marks

| Height 5marks | | Mark |
|------------------------------|---------------------------------------|----------|
| Correct height of orthosis | Correct extension of proximal brims | 5 |
| Incorrect height of orthosis | Correct extension of proximal brims | 2 |
| Correct height of orthosis | Incorrect extension of proximal brims | 2 |
| Incorrect height of orthosis | Incorrect extension of proximal brims | 0 |



KAFO assembling 20 marks

Uprights 3 marks

Upright should be parallel together and bend as contour of limb without any rotation and excessive space to the limb.

Any mistake one mark loosing.

AFO alignment 3

Distal part of orthosis (AFO) should place in correct alignment and direction regards to the knee axis.

Bending 5 marks

Uprights should bend smoothly without any space to the shells and (3-5mm) distance to the uncovered skin.

Any upright has one mark and one mark for connection to the knee joint.

Knee alignment 5 marks

Knee joints should place horizontal and perpendicular to the knee axis, medial knee joint needs 6mm space and lateral KJ needs 4mm space.

Distance from center of medial knee joint to the floor should be same to the LKJ.

Anatomical and mechanical knee joints should be coinciding together.

Ankle axis 2 marks

Ankle and knee joints should move smoothly, that means they should be perpendicular to the axis in frontal & transverse planes.



Clinical practicum in AKO

(Project 4 – Padding and Fitting 20 marks)

| No | Name | Fabrication | | | | | Fitting & Padding | | | | | | Sum % 50 | |
|----|------|-------------|------------|----------|-------------|--------|----------------------|-----------------------|-------------------|----------------|-----------|--------------|-------------|--------|
| | | Strength 5 | Symmetry 5 | Height 7 | Smoothing 3 | Sum 20 | Comfort in sitting 5 | Comfort in standing 8 | Gait of patient 5 | Skin redness 3 | Padding 5 | Suspension 4 | | Sum 30 |
| 1 | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | |

Padding 5 marks

Fix the Velcro straps on their place by speed rivet securely and cosmetically, if direction or length of strap is not correct decrease 2 marks.

For any unformed or unstable rivet decrease 2 marks.



Fitting 25 marks

Any Student is expected to check the orthosis on the patient body statically, Check about any excessive pressures or any gaps

Check the lengths of orthosis and mark the place of straps, Ask the patient to wear the device and walk, after 5 minutes walking any student should identify the any gait deviations and correct them, take off the orthosis and check the skin about any redness or pressures. Students should be sure about orthosis fitting and wearing of device comfortably and easily. Ankle & knee joints should move smoothly and properly without limitations.

Gait of patient 5marks

| Gait of patient 5marks | | Mark |
|-------------------------------------|-------------------------------|------|
| Walking without any gait deviations | Stable orthosis in standing | 5 |
| Walking without any gait deviations | unstable orthosis in standing | 2 |
| Walking with some gait deviations | Stable orthosis in standing | 2 |
| Walking with gait deviations | unstable orthosis in standing | 0 |

Skin redness 3 marks

| Skin redness 3 marks | | Mark |
|--------------------------------|--------------------------------------|------|
| Tolerate able pressure on skin | temporary redness | 3 |
| Tolerate able pressure on skin | temporary redness (more than 10 min) | 1 |
| Excessive pressure on skin | stable redness | 0 |

Comfort 10 marks

| Comfort in sitting 5 marks | | | | Mark |
|----------------------------|---------------------|---------|-----------------|------|
| Easily donning & doffing | Sitting comfortably | No pain | No skin redness | 5 |



| | | | | |
|---------------------------------|-----------------------|-----------|-------------------|---|
| Easily donning & doffing | Sitting uncomfortably | No pain | No skin redness | 2 |
| Easily donning & doffing | Sitting uncomfortably | Some pain | Some skin redness | 1 |
| Difficulty in donning & doffing | Sitting uncomfortably | Some pain | Some skin redness | 0 |

| Comfort in standing 8 marks | | | | Mark |
|--------------------------------|---|-----------|--|------|
| Easily lock & unlocking | Matching of anatomical & mechanical knee | No pain | Matching of anatomical & mechanical ankle | 8 |
| Easily lock & unlocking | Matching of anatomical & mechanical knee | No pain | Mismatching of anatomical & mechanical ankle | 4 |
| Easily lock & unlocking | Mismatching of anatomical & mechanical knee | Some pain | Matching of anatomical & mechanical ankle | 3 |
| Difficulty in lock & unlocking | Matching of anatomical & mechanical knee | Some pain | Matching of anatomical & mechanical ankle | 0 |

Suspension 4marks

| Suspension 4marks | | Mark |
|--------------------------|--------------------|------|
| No pistoning motion | Complete fitting | 4 |
| Small pistoning motion | Complete fitting | 2 |
| Obvious pistoning motion | Incomplete fitting | 0 |

Marking:

(Project 1 – Casting – 15 marks - Assessment quiz 10) + (P2 – Fabrication 10) (P3- KAFO assembling 15 marks) + (Project 4 –Fitting 25 marks) + (Written exam 25 marks) = 100

