Module designation	Leather Science and Industry
Semester(s) in which the module is taught	Odd semester
Person responsible for the module	Prof. Ir. Yuny Erwanto, S.Pt.,M.P., Ph.D., IPM. Prof. Ir. Ambar Pertiwiningrum, M.Si.,Ph.D., IPM., ASEAN Eng. Ir. Nanung Agus Fitriyanto, S.Pt.,M.Sc.,Ph.D., IPM.
Language	Bahasa and English
Relation to curriculum	Specialization's Elective
Teaching methods	Classical lecture and discussion
Workload (incl. contact hours, self-study hours)	Total workload: 79 hours Contact hours: - Lecture: 23 hours - Academic activity: 28 hours Private study: 28 hours
Credit points	2/0
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	Course Outcomes (CO): 1. Able to understand the physical and chemical structure of skin 2. Able to understand the process of skin preservation 3. Able to understand the process of skin tanning and testing 4. Able to understand the cleaner production in skin tanning process Expected Learning Outcomes: - Mastery in Sciences: 1. Able to master the current animal science and its application theory. (CO1, CO2, CO3) 2. Able to master the livestock production science, animal nutrition and fed science, animal products technology, and the livestock social economics in relation to food security and environment. (CO1) 3. Able to master the design, management, and development of livestock research. (CO4) - Special skills: 1. Able to formulate and solve problems in the national development especially in terms of animal husbandry. (CO3, CO4) 2. Able to solve problems and anticipate issues in the development of animal science and industry. (CO3) - General skills: 1. Able to develop logical, critical, systematic, and creative thought through scientific research, creation of design in the science and technology, which pays attention and applies humanity values according to their expertise. The graduates are able to arrange scientific concept and the study result based on the principles, procedures, and scientific ethics. (CO3, CO4)
Content	This course of leather science and industry explains the skins from various types of animals, biochemistry, tissue structure, skin characteristics physically and chemically, principles of preservation

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<tr><td></td><td colspan="4">and tanning, tanning waste treatment, skin tanning factory design and leather industry in Indonesia.</td></tr>
<tr><td rowspan="8">Exams and assessment formats</td><td colspan="2">Assessment Components</td><td>Course Outcomes (CO)</td><td>Percentage (%)</td></tr>
<tr><td colspan="2">1. Midterm exam (written test, take home exam, paper assignment)</td><td>CO1, CO2, & CO3</td><td>35</td></tr>
<tr><td colspan="2">2. Final exam (written test, take home exam, paper assignment)</td><td>CO2, CO3, & CO4</td><td>35</td></tr>
<tr><td colspan="2">3. Discussion</td><td>CO1, CO2, & CO3</td><td>10</td></tr>
<tr><td colspan="2">4. Take-home written assignments</td><td>CO1, CO2, & CO3</td><td>20</td></tr>
<tr><td colspan="4">Grade and Score</td></tr>
<tr><td>Grade</td><td>Score</td><td>Grade</td><td>Score</td></tr>
<tr><td colspan="4"><table>
<tr><td>A</td><td>≥80</td><td>C+</td><td>45-49,9</td></tr>
<tr><td>A-</td><td>75-79,9</td><td>C</td><td>40-44,9</td></tr>
<tr><td>A/B</td><td>70-74,9</td><td>C-</td><td>35-39,9</td></tr>
<tr><td>B+</td><td>65-69,9</td><td>C/D</td><td>30-34,9</td></tr>
<tr><td>B</td><td>60-64,9</td><td>D+</td><td>25-29,9</td></tr>
<tr><td>B-</td><td>55-59,9</td><td>D</td><td>20-24,9</td></tr>
<tr><td>B/C</td><td>50-54,9</td><td>E</td><td>0-19,9</td></tr>
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<tr><td>Study and examination requirements</td><td colspan="4">The final grade in the module is composed of 35% performance on Midterm exam, 35% final exam, 10% discussion, and 20% take-home written assignment. Students must have a final grade of 70% or higher to pass</td></tr>
<tr><td>Reading list</td><td colspan="4">

- Bailey, D.G. 1997. Handling, Grading and Curing of Hide and Skins. In Inedible meat by-products. A.M. Pearson and T.R. Dutson Edts. Elsevier App. Sci. New York.
- Frendrup, W. 2000. Hair-save Unhairing Methods in Leather Processing. Regional Programme for Pollution Control in the Tanning Industry in Sout East Asia. UNIDO.
- International Union of Leather Technologist and Chemist Societies (IULTCS). 2004. IUE Recommendation on Cleaner Technologies for Leather Production. Available at http:www.google.co.id
- Kamini, N. R., C. Hemachander, J. Geraldine Sandana Mala, and R. Puvanakhrisnan. ----, Microbial Enzyme Technology, in Leather Industry. Department of Biotechnology, Central Leather Research Institute, Adyar.
- Ockerman, H. W. and C. L. Hansen. 2000. Animal-By-prdouct Processing &Utilization. CRC Press. Washington.
- Sarkar, K. T. 1995. Theory and Practice of Leather Manufacture. Revised ed. The Author. Madras.
- Triatmojo, S. 2009. Impelementasi “Produksi Bersih” dalam Industri Penyamakan Kulit Guna Peningkatan Efisiensi dan Pencegahan Pencemaran Lingkungan. Pidato Pengukuhan Jabatan Guru Besar. Universitas Gadjah Mada. Yogyakarta.
- UNEP.1999. Pollution, Prevention and Abatement Handbook: Toward Cleaner Production/Washington.

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	- White, H.F., C.A. Money, J.M. Poole, and Karamoshos. Cabron Dioxide Deliming of Full Thicness hide. CSIRO Leather research Center. Victoria.