

2. 機械・システム工学系 Mechanical and System Engineering Field			MSE-S1
授業科目名 Course Title	材料加工及び設計工学 Engineering Material Processing and Design	単位数 Credit	2
担当教員 Instructor	大津 雅亮 OTSU Masaaki 本田 知己 HONDA Tomomi 岡田 将人 OKADA Masato 三浦 拓也 MIURA Takuya	開講学期 Semester	春学期 Spring
キーワード Keywords	metal forming, mechanical machining, joining, machine design, tribology		

授業概要 Course summary
<p>本講義では、材料加工学および機械要素設計の基本概念を紹介する。主なトピックスは以下に示すとおりである。</p> <ul style="list-style-type: none"> ➤ 塑性加工の分類と特徴，各種塑性加工法 ➤ 機械加工の分類と特徴，各種機械加工法 ➤ 接合加工の分類と特徴，各種接合加工法 ➤ 機械要素の分類，機械要素設計の基礎，各種機械要素の設計法 <p>This course provides an introduction to the basic concept of the metal forming processes, machining processes, joining processes and design of machine elements. This course includes the following topics:</p> <ul style="list-style-type: none"> ➤ Classification and features of the metal forming process and details of various metal forming processes. ➤ Classification and features of the machining process and details of various non-traditional machining processes. ➤ Classification and features of the joining process and details of various joining processes. ➤ Classification of machine elements, Fundamental of machine design, Design method of various machine elements.
到達目標 Course goal
<p>1. 塑性加工，機械加工，接合加工による金属加工法を理解して，様々な機械部品の製造にどのような加工法が用いられているかを説明できるようになる。</p> <p>2. どのような機械要素があり，どのように使用されているかを理解して，機械要素を使用するための設計法を習得する。</p> <p>1. To understand the materials processing such as metal forming, machining and joining, and to be possible to explain which materials processing methods are used for manufacturing various machine parts.</p> <p>2. To understand the existence and applications of the various machine elements and to acquire the design method of the various machine elements.</p>
授業内容 Course description
<p>1st week: 授業のガイダンスと圧延加工の分類・特徴 Guidance of this class, and classification and features of rolling process</p> <p>2nd week: 鍛造加工の分類・特徴 Classification and features of forging process</p>

3rd week: 押出し加工と引抜き加工の分類・特徴 Classification and features of extrusion and drawing processes
4th week: 板材成形の分類・特徴 Classification and features of sheet metal forming process
5th week: 機械加工の原理と歴史 Principle and history of machining
6th week: 機械加工の分類・特徴 1 Classification and features of machining 1
7th week: 機械加工の分類・特徴 2 Classification and features of machining 2
8th week: 様々な特殊加工の詳細 Details of various non-traditional machining processes
9th week: 接合加工の分類・特徴 Classification and features of joining process
10th week: 溶融接合の分類・特徴 Classification and features of fusion joining
11th week: 固相接合の分類・特徴 Classification and features of solid-state joining
12th week: 機械要素の分類 Classification of machine elements
13th week: 機械要素の基本 1 Fundamental of machine elements 1
14th week: 機械要素の基本 2 Fundamental of machine elements 2
15th week: 様々な機械要素の設計法 Design method of various machine elements
準備学習（予習・復習）等 Preparation / Review
予習 Preparation 特になし Unnecessity
復習 Review 授業内容の追加学習 Review and exploration about study content
授業形式 Class style
講義（演習を含む） Lectures with practice
成績評価の方法・基準 Method of evaluation
出席，レポート Attendance and report
教科書・参考書等 Textbook and material
配布資料 Printed materials prepared by instructors
受講要件・予備知識 Prerequisite
Basic knowledge of the “Planning” for region and city
その他の注意事項 Note