

科目ナンバリング		U-LAS12 10015 LE57									
授業科目名 <英訳>		Advanced Dynamics Advanced Dynamics				担当者所属 職名・氏名		工学研究科 准教授 KIM , SUNMIN			
群	自然科学科目群			分野(分類)	物理学(基礎)			使用言語	英語		
旧群	B群	単位数	2単位	週コマ数	1コマ	授業形態	講義 ( 対面授業科目 )				
開講年度・ 開講期	2024・後期		曜時限	火3		配当学年	主として1回生	対象学生	理系向		
[授業の概要・目的]											
This course deals with the mechanics of rigid body based on Newton's mechanics. Description of motion of rigid bodies and related applications will be explained in detail.											
[到達目標]											
To understand various dynamic topics comprehensively based on many practical examples and problems											
[授業計画と内容]											
<p>The main topics in this lecture are as follows; (Each items will be covered by 2-3 weeks)</p> <ol style="list-style-type: none"> <li>Curvilinear motion of a particle [1 week] <ul style="list-style-type: none"> <li>- Rectangular components, normal and tangential components, cylindrical components</li> </ul> </li> <li>Planer motion of a rigid body [2 weeks] <ul style="list-style-type: none"> <li>- Translation, rotation about a fixed axis, relative motion analysis using rotating axes</li> </ul> </li> <li>General motion of a rigid body [2 weeks] <ul style="list-style-type: none"> <li>- The time derivative of a vector in a rotating reference frame</li> </ul> </li> <li>Force and energy of a rigid body [3 weeks] <ul style="list-style-type: none"> <li>- Mass moment of inertia, equations of motion, principle of work and energy, conservation of energy</li> </ul> </li> <li>Impulse and momentum of a rigid body [3 weeks] <ul style="list-style-type: none"> <li>- Linear and angular momentum, impact, principle of impulse and momentum, conservation of momentum</li> </ul> </li> <li>Three dimensional motion analysis [3 weeks] <ul style="list-style-type: none"> <li>- Moments and products of inertia, equations of motion, gyroscopic motion</li> </ul> </li> <li>Final Examination</li> <li>Feedback [1 week]</li> </ol>											
[履修要件]											
Having taken the course"Fundamental Physics A" is recommended.											
[成績評価の方法・観点]											
Evaluation is based on assignments (40%) and written tests (final exam: 60%).											
[教科書]											
<p>使用しない</p> <p>Some handout materials will be provided during the class.</p>											
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## Advanced Dynamics(2)

### [参考書等]

( 参考書 )

R. C. Hibbeler 『Dynamics』 ( Prentice Hall ) ISBN:978-0-13-291127-6 ( very well organized textbook with abundant examples )

### [授業外学修 ( 予習・復習 ) 等]

Self-review is strongly recommended after each lecture.

### [その他 ( オフィスアワー等 ) ]

No specific office hour. Email communication is preferred through [kim.sunmin.6x@kyoto-u.ac.jp].