# 2023後期　大学院工学府授業科目一覧 _Course list for the 2023 2nd semester (Graduate School of Engineering)

2023.9.24　UP

※Moodleコースは、授業担当教員による準備が整い次第、アクセス可能になります。しばらくお待ちください。
授業前日になってもアクセスできない場合は、大学院係へお問い合わせください。
※Moodle course URL will be accessible once it is ready by the course instructor. If you cannot access it now, please wait for a while. If you cannot access it even the day before the class starts, please contact the Graduate School Section.

**この色の授業科目は対面授業を含む授業科目です。**
**Face-to-face subjects are showed in colored cells.**
※時間割記載の講義室から変更がある場合、MoodleやLive Campusでお知らせします。
※If there are any changes of the lecture rooms listed on the timetable, we will notify you via Moodle or Live Campus.

※1　英語対応（レベル説明は最下段にあります。）/※1　English support (Please refer to notes on the bottom of this list.)

※2　対面授業科目（○がついている科目は、対面授業を含む授業科目です。）/※Face-to-face subject (Face-to-face subjects are showed in colored cells.)

※3　遠隔授業の形態（同期、非同期の両方に○がついている場合は、2つの形態を組み合わせて実施する授業です。）/※Type of Remore Class (Classes with ○ in both Synchronous and Asynchnorous columns are provided by combining the two types.)

同期…対面授業と同じ環境をインターネットサービス（Zoomなど）を用いて、リアルタイムに受講する形式です。/Synchronous…Students take a remote class which is equivalent to a face-to-face class "Synchronously" (in real time) using an internet service (such as Zoom).

非同期…対面授業と同じ環境をMoodle やLiveCampusを使用して、資料や課題などを用意し、授業を非同期に受講する形式です。/Asynchronous…Students take a remote class which is equivalent to a face-to-face class "Asynchronously" (at their own pace) with materials and assignments provided via Moodle and/or LiveCampus.

| 科目区分 | 開講区分 Term | 科目コード Course code | 科目名（日本語） Course Name in Japanese | 科目名（英語） Course Name in English | クラス Class | 担当教員名 Instructor Name in Japanese | Instructor Name in English | 時間割 | Timetable | SEIC | 英語対応 English support ※1 | | 対面授業 Face-to-face | 遠隔授業 Remote Class ※3 | | | 備考 Remarks | Moodle Course URL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | レベル Level | コメント Comment | | 同期 Synchronous | 非同期 Asynchronous | | | |
| 上級語学科目 Advanced Language Subjects | 通期 Semester | 42000809 | 日本語入門 | Japanese for Beginners | 1 | 石川 朋子 | ISHIKAWA Tomoko | 水曜2限 | Wednesday 2nd period | ○ | 5 | Only for SEIC Students | Moodleのコース（別欄のURL参照）にアクセスし、授業についての注意事項を確認してください。Access the Moodle course (see URL in the separate column) and review the notes about the class. | | | | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1466 |
| 実践実習科目 Practical Training Subjects | 3Q | 26990824 | 宇宙システムPBL Ⅰ | Space Systems PBL Ⅰ | 1 | 趙 孟佑 | CHO Mengu | 火曜5限 火曜6限 | Tuesday 5th period Tuesday 6th period | ○ | 5 | Only for SEIC Students | To be annouced separately | | | | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1417 |
| 実践実習科目 Practical Training Subjects | 3Q | 26990824 | 宇宙システムPBL Ⅰ | Space Systems PBL Ⅰ | 2 | 岩田 稔 | IWATA Minoru | 火曜5限 火曜6限 | Tuesday 5th period Tuesday 6th period | ○ | 5 | Only for SEIC Students | ○ | ○ | | 初回講義（オリエンテーション）については電子メールで通知します。履修登録をして、プロジェクトが決まった後にMoodleコース（別欄URL参照）にアクセスしてください。The information of first class (orientation) will be announced via e-mail. Register, and access the Moodle course(see URL in the different column) after finishing the project assignment. | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1418 |
| 実践実習科目 Practical Training Subjects | 4Q | 26990825 | 宇宙システムPBL Ⅱ | Space Systems PBL Ⅱ | 1 | 趙 孟佑 | CHO Mengu | 火曜5限 火曜6限 | Tuesday 5th period Tuesday 6th period | ○ | 5 | Only for SEIC Students | To be annouced separately | | | | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1455 |
| 実践実習科目 Practical Training Subjects | 4Q | 26990825 | 宇宙システムPBL Ⅱ | Space Systems PBL Ⅱ | 2 | 岩田 稔 | IWATA Minoru | 火曜5限 火曜6限 | Tuesday 5th period Tuesday 6th period | ○ | 5 | Only for SEIC Students | ○ | ○ | | 詳細は3Qの講義「宇宙システムPBL Ⅰ」で通知します。The detail will be announced in the course "Space System PBL Ⅰ"(3Q) | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1418 |
| 数理情報科目 Mathematical Information Subjects | 3Q | 26500911 | 視覚画像認識特論 | Vision and Image Recognition | 1 | 花沢 明俊 | HANAZAWA Akitoshi | 水曜3限 金曜2限 | Wednesday 3rd period Friday 2nd period | ○ | 5 | | ○ | | | Bring your own laptop PC. | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1400 |
| 専門科目 Specialized Subjects | 通期 Semester | 26990832 | 実践工学総合科目G | Comprehensive Subject of Practical Engineering G | 1 | 趙 孟佑 | CHO Mengu | 集中講義 | intensive lecturer | ○ | 5 | | ○ | ○ | | To be announced separately | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1491 |
| 専門科目 Specialized Subjects | 3Q | 26440810 | 高速衝突工学特論 | Advanced High Velocity Impact Engineering | 1 | 赤星 保浩 | AKAHOSHI Yasuhiro | 月曜3限 水曜1限 | Monday 3rd period Wednesday 1st period | ○ | 3 | | ○ | | | 初回は1-3D教室で実施する。The lecture on Oct.2nd will given in the lecture room 1-3D. | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1377 |
| 専門科目 Specialized Subjects | 3Q | 26440819 | スペースダイナミクス特論 | Advanced Space Dynamics | 1 | 平木 講儒 | HIRAKI Koju | 月曜1限 木曜2限 | Monday 1st period Thursday 2nd period | ○ | 5 | | ○ | | | | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1379 |
| 専門科目 Specialized Subjects | 3Q | 26440903 | 高速気体力学特論 | High-speed Gas Dynamics | 1 | 坪井 伸幸 | TSUBOI Nobuyuki | 月曜4限 木曜1限 | Monday 4th period Thursday 1st period | ○ | 5 | 対面で実施します。来学できない事情がある場合、事前に担当教員に相談ください。This class will be carried out face-to-face. If you are unable to come to the school, please consult with the teacher in advance. | ○ | ○ | | Moodleコース（別欄URL参照）にアクセスし、初回授業に関する注意を確認すること。Access the Moodle course(see URL in the different column) and check the attention to the first class. | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1381 |
| 専門科目 Specialized Subjects | 3Q | 26490802 | エネルギー工学特論 | Energy Conversion and Plasma Physics | 1 | 豊田 和弘 | TOYODA kazuhiro | 火曜3限 金曜1限 | Tuesday 3rd period Friday 1st period | ○ | 5 | | ○ | | | 履修登録をし、Moodleにアクセスすること。Register, and access the Moodle page. | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1390 |
| 専門科目 Specialized Subjects | 3Q | 26500928 | 衛星電力システム特論 Ⅰ | Satellite Power System Ⅰ | 1 | 趙 孟佑 | CHO Mengu | 金曜4限 金曜5限 | Friday 4th period Friday 5th period | ○ | 5 | | ○ | | | | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1402 |
| 専門科目 Specialized Subjects | 3Q | 26500950 | 宇宙システム工学 Ⅰ | Space Systems Engineering Ⅰ | 1 | 三原 荘一郎 | MIHARA Shoichiro | 集中講義 | intensive lecturer | ○ | 5 | | ○ | ○ | | Registe and access the Moodle site, Read instruction before stating to attend the lecture. | | https://ict-t.el.kyutech.ac.jp/course/edit.php?id=1486 |
| 専門科目 Specialized Subjects | 4Q | 26500908 | 衛星工学入門 | Introduction to Satellite Engineering | 1 | 趙 孟佑 | CHO Mengu | 木曜1限 木曜2限 | Thursday 1st period Thursday 2nd period | ○ | 5 | English and Japanese are used in parallel. | ○ | ○ | ○ | | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1443 |
| 専門科目 Specialized Subjects | 4Q | 26500929 | 衛星電力システム特論 Ⅱ | Satellite Power System Ⅱ | 1 | 趙 孟佑 | CHO Mengu | 金曜4限 金曜5限 | Friday 4th period Friday 5th period | ○ | 5 | | ○ | | | | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1402 |
| 専門科目 Specialized Subjects | 4Q | 26500951 | 宇宙システム工学 Ⅱ | Space Systems Engineering Ⅱ | 1 | 三原 荘一郎 | MIHARA Shoichiro | 集中講義 | intensive lecturer | ○ | 5 | | ○ | ○ | | Registe and access the Moodle site, Read instruction before stating to attend the lecture. | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1445 |
| 専門科目 Specialized Subjects | 4Q | 26600001 | 構造解析特論 | Advanced Analysis of Structures | 1 | 陳 沛山 | Chen Pei-shan | 火曜3限 火曜4限 | Tuesday 3rd period Tuesday 4th period | ○ | 5 | | ○ | | | | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1447 |
| 専門科目 Specialized Subjects | 4Q | 26640002 | 太陽系惑星環境特論 | Solar System Planetary Physics and Environments | 1 | 寺本 万里子 | TERAMOTO Mariko | 月曜4限 月曜5限 | Monday 4th period Monday 5th period | ○ | 5 | | ○ | ○ | | 特別な理由がない限りは対面となります。Without a special reason, the class will be heli in person. | | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1449 |

**英語対応**

- **Level 0　原則、日本人学生対象**
  **（留学生が受講する場合、英語教員の面談及び習熟度チェックが必要）**
- **Level 1　英語対応しない**
- **Level 2　講義は日本語、資料は日本語もしくは英語。レポート（試験）は英語可**
- **Level 3　リクエストがあれば英語・日本語を併用して授業**
  **（日本人のみの授業の場合は日本語だが，外国人が受講すれば英語対応する科目を含む。）**
- **Level 4　リクエストがあれば英語だけの授業を開講**
  **（日本人のみの授業の場合は日本語だが，外国人が受講すれば英語対応する科目を含む。）**
- **Level 5　常に英語授業**
- **Level 6　留学生のみ受講可能**

**English support**

- **Level 0　As a general rule, available only for Japanese Students.**
  **(International students who wish to take an English class must have an interview and proficiency check with the English instructor for getting permission.)**
- **Level 1　Available only in Japanese.**
- **Level 2　Lectures are held in Japanese. Lecture materials can be provided in English upon request. Students can submit reports written in English.**
- **Level 3　Upon request, lectures will be given in both Japanese and English.**
- **Level 4　Upon request, lectures will be given entirely in English.**
- **Level 5　Conducted entirely in English**
- **Level 6　Available only for International Students**

# Announcement of Special Lecture
# 開 講 通 知

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| Subject<br>科目名 | **“Comprehensive Subject of Practical Engineering G”<br>実践工学総合科目 G** |
| Subtitle<br>副題 | **“Space law for new space actors: fostering responsible national space activities”** |
| Starting Date<br>開講日 | **6th period, Thurs. October 5th, 2023<br>2023 年 10 月 5 日（木） 6 限** |

| Class date 授業日 | Lecture room 講義室 |
|---|---|
| 6th period (18:00-19:30) of the following dates<br>Thur. Oct. 5, 12, 19<br>Thur. Nov. 9, 16, Tues. Nov. 21<br>Thur. Nov. 30<br>Thur. Dec. 7, 14, Tues. Dec. 19<br>Thur. Dec. 21 | To be held only by remote class |
| 1 限 8:50-10:20, Tues. Jan. 9<br>2 限 10:30-12:00, Tues. Jan. 9<br>4 限 14:40-16:10, Wed. Jan. 10 | To be held in-person<br>Jan. 9 and Jan. 10<br>➔Room# C-1C, General Education<br>／総合教育棟 1 階 (Map No.6) |
| 3 限 13:00-14:30, Thur. Jan. 11<br>2 限 10:30-12:00, Fri. Jan. 12 | To be held in-person<br>Jan. 11 and Jan. 12<br>➔Interactive Learning Room<br>／未来型インタラクティブ教育棟 (Map No.26) |

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| **Lecturer<br>担当講師** | **Professor CHO Mengu (Supported by UNOOSA)<br>趙 孟佑（協力：国連宇宙部）** |
| **Credit / 単位** | **2 credit** |
| **Moodle URL** | https://ict-t.el.kyutech.ac.jp/course/view.php?id=1491 |

- Please refer to the syllabus for details about the course offering.
- **If you want to attend it, please register both on Moodle and Live Campus during the 3rd Q Registration period (from September 25 to October 16, 2023).**
- This course will be given under the title of "Comprehensive Subject of Practical Engineering G".
- 詳細はシラバスをご確認ください。
- **履修希望の学生は第3Q 履修登録期間中(2023 年 9 月 25 日～10 月 16 日)に Moodle と Live Campus 両方で登録すること。**
- 本科目は「実践工学総合科目 G」という科目名で登録されます。

# Syllabus

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| 科目名 Course title | 実践工学総合科目G / Comprehensive Subject of Practical Engineering G |
| 副題 Course subtitle | Space law for new space actors: fostering responsible national space activities |
| 担当教員名 Name of Instructors | 趙 孟佑 (協力:国連宇宙部) / CHO Mengu (Supported by UNOOSA) |
| 単位数 Credit | 2 credits |
| 授業の概要 Course Description | Increased awareness of the fundamental principles of international space law through an interactive scenario-based exercise in break out groups taking advantage of the 5 consecutive in-person lectures at Kyutech. Students will be discussing within the break out groups as policy and law makers of a mock emerging spacefaring nation to overcome challenging scenarios and find solutions by setting necessary procedures and regulation. The first 11 lectures will be delivered online and highlight the fundamental principles of international space law, and the following lectures will focus on national space law and policy. |
| カリキュラムにおけるこの授業の位置付け Course and Curriculum linkage | The objective of this course is to help students become familiar with the principles of space law and policy which are crutial for every country. |

授業計画 Course Calendar/Class Topic

| | テーマ | 内容 |
|---|---|---|
| 1. | Understanding the Fundamental Principles of International Space Law | Introduction to Space Law – Why Space Law Matters |
| 2. | Understanding the Fundamental Principles of International Space Law | UN COPUOS and UNOOSA |
| 3. | Understanding the Fundamental Principles of International Space Law | Liability Convention [& student presentations] |
| 4. | Understanding the Fundamental Principles of International Space Law | Registration Convention [& student presentations] |
| 5. | Understanding the Fundamental Principles of International Space Law | Rescue and Return Agreement [& student presentations] |
| 6. | Other principles and GA resolutions | Use of Nuclear Power Sources in Outer Space & Dark and Quiet Skies [& student presentations] |
| 7. | Other principles and GA resolutions | Space Debris Mitigation Guidelines [& student presentations] |
| 8. | Other (Legal) Aspects | Space Resources and Long-term Sustainability of Outer Space Activities [& student presentations] |
| 9. | Other (Legal) Aspects | Mid-term Exam |
| 10. | Other (Legal) Aspects | Planetary Defence and Planetary Protection [& student presentations] |
| 11. | Other Aspects | Space Economy [& student presentations] |
| 12. | National Space Law and Policy | Introduction of Scenario Based Exercise (SBE) [SBE in break up groups] |
| 13. | National Space Law and Policy | National Space Law: Purpose and Scope [& student presentations & SBE] |
| 14. | National Space Law and Policy | Seven Key Elements of a National Space Law [& student presentations& SBE] |
| 15. | National Space Law and Policy | Authorization and Continuous Supervision [& student presentations & SBE] |
| 16. | Final exam | In class student presentations of SBE in break up groups |

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| 授業の進め方 General Course Policies | | Start: 5 October 2023, 6pm. First 11 lectures virtual, lecture 12 – 16 in person. |
| 授業の達成目標 Course Objectives | 授業の達成目標の解説)The goal of this course is | The goal of the course is to raise awareness and enhance students' understanding of key elements of international space law. Through a series of lectures, both in-person and online, students will be exposed to comprehensive and informative content on various aspects of space law. The course aims to deepen their knowledge of fundamental principles, regulations, and policies governing space activities. By the end of the course, students will have gained a broader perspective on the legal framework surrounding space exploration, fostering their ability to navigate and apply space law principles effectively. |
| | 具体的な授業の達成目標 Course Objectives | 1. Understanding the fundamental principles of international space law<br>2. Raising awareness of national space law and policy<br>3. Applying the knowledge through presentations and solving a Scenario Based Exercise |
| 成績評価の基準および評価方法 Evaluation Methods and Grading Criteria | | Evaluation will be made through the following points;<br>·Mid-Term Exam ·Final Exam ·In class presentation ·In class participation |
| 授業外学習(予習・復習)の指示 Assignment Instructions | | Students are expected to make a presentation on their country's national space activities as well as future plans and the surrounding national law in relations to space law. If more than one course participants come from the same country, the course lecturer will assign different countries. |
| キーワード Keywords | | International Law, Space Law, National Space Law , Space Policy. |

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| 教科書 Required Textbooks | None. |
| 参考書 References/Recommended Reading | **1)** Question of the Peaceful Use of Outer Space [RES 1348 (XIII)] (https://www.unoosa.org/oosa/oosadoc/data/resolutions/1958/general_assembly_13th_session/res_1348_xiii.html)<br><br>**2)** UNOOSA Annual Report 2022 (https://www.unoosa.org/documents/pdf/annualreport/UNOOSA_Annual_Report_2022.pdf)<br><br>**3)** Overview of UNOOSA's activities (https://www.unoosa.org/documents/pdf/aboutus/UNOOSA_Project_One-Pagers.pdf)<br><br>**4)** Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*<br><br>**5)** Convention on International Liability for Damage Caused by Space Objects*<br><br>**6)** Convention on Registration of Objects Launched into Outer Space*<br><br>**7)** Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space*<br><br>**8)** International Co-operation in the Peaceful Uses of Outer Space [RES 1721 (XVI)]*<br><br>**9)** International Cooperation in the Peaceful Uses of Outer Space [A/RES/55/122]*<br><br>**10)** Application of the concept of the "launching State" [A/RES/59/115]*<br><br>**11)** Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects [A/RES/62/101]*<br><br>**12)** Recommendations on national legislation relevant to the peaceful exploration and use of outer space [A/RES/68/74]*<br><br>**13)** Declaration on the fiftieth anniversary of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies [A/RES/72/78]*<br><br>**14)** The Principles Relating to Remote Sensing of the Earth from Outer Space [A/RES/41/65]*<br><br>**15)** The Principles Relevant to the Use of Nuclear Power Sources in Outer Space [A/RES/47/68]*<br><br>**16)** Safety Framework for Nuclear Power Source Applications in Outer Space [A/AC.105/934]*<br><br>**17)** Space Debris Mitigations Guidelines of the Committee on the Peaceful Uses of Outer Space [ST/SPACE/49]*<br><br>**18)** Compendium of space debris mitigation standards adopted by States and international organizations [A/AC.105/2023/CRP.12] (https://www.unoosa.org/res/oosadoc/data/documents/2023/aac_1052023crp/aac_1052023crp_12_0_html/AC105_2003_CRP12E.pdf)<br><br>**19)** Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space*<br><br>**20)** Working Group on Legal Aspects of Space Resource Activities (https://www.unoosa.org/oosa/en/ourwork/copuos/lsc/space-resources/index.html)<br><br>**21)** Schematic overview of national regulatory frameworks for space activities [A/AC.105/C.2/2023/CRP.28*] (https://www.unoosa.org/res/oosadoc/data/documents/2023/aac_105c_22023crp/aac_105c_22023crp_28_0_html/AC105_C2_2023_CRP28E.pdf)<br><br>**22)** National Space Law and Policy Database, ASTRO (https://astro.unoosa.org/astro/en/national-space-law-landing-page.html)<br><br>* Documents can be found at https://astro.unoosa.org/astro/instruments-treaties-search.html |
| 備考 Notes | |
| 電子メールアドレス Email address | To be announced |