<<Last Updated:2021/03/05>>

# Course Schedule Information

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| **Course Code** | 331220 |
| **Semester** | Spring and Summer Term |
| **Day and Period** | Mon3 |
| **Course Name (Japanese)** | 知能と学習 |
| **Room** | Others |
| **Course Name** | Intelligence and Learning |
| **Capacity** | 100 |
| **Course Numbering Code** | 33BIEN6F215,33INPS6F215,33COSC6F215,33INSE6F215,33INNE6F215,33MUEN6F215 |
| **Credits** | 2.0 |
| **Student Year** | 1,2 |
| **Instructor** | Masayuki Numao |

# Detailed Syllabus Information

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| **Course Name** | Intelligence and Learning |
| **Language of the Course** | Japanese/English |
| **Type of Class** | Lecture Subject |
| **Course Objective** | Artificial Intelligence (AI) pursues intelligent computers. Computers are now so intelligent that one has already defeated the World Champion in chess several times, communicates with its user in English or Japanese, discovers a new knowledge from a huge data file, and designs a picture and a music piece. This lecture lays the foundation of such technologies where adaptation and learning are crucial. Data Mining is also discussed from the view point of AI and Machine Learning. |
| **Learning Goals** | Students can discuss what the source of intelligence is. They can program some simple AI. They learn Machine Learning and Data Mining from the view point of AI, and can use their tools and write their simple programs. |
| **Requirement / Prerequisite** | |
| **Class Plan** | 1. What is Artificial Intelligence and Machine Learning?<br>2. Learning with Decision Trees<br>3. Rule-Based Systems and Rule Learning<br>4. Naïve Bayes and Nearest Neighbor<br>5. Association rules and their learning<br>6. Clustering<br>7. EM algorithm<br>8. Support Vector Machine<br>9. Predicate Logic<br>10. Inductive Logic Programming and Relational Mining<br>11. Version Spaces and Explanation-Based Learning<br>12. Preprocessing and Data transformation for Data Mining<br>13. Feature Selection<br>14. Feature Construction and Predicate Invention<br>15. Ensemble Learning |
| **Independent Study Outside of Class** | Students will do some home works and write some papers. |
| **Textbooks** | Slides are distributed. |
| **Reference** | Russell and Norvig: Artificial Intelligence - A Modern Approach Fourth Edition, Prentice Hall (2020). |
| **Grading Policy** | Final 50%. Papers 30%. The number of questions counted during each class period 20%. |

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| **Other Remarks** | The slides are uploaded on CLE.  Online lectures on CLE will start from 13:30 every Monday from April 12. |
| **Special Note** | Face-to-face lecture in room: F-482, The Institute of Scientific and Industrial Research ① in https://www.sanken.osaka-u.ac.jp/en/access/ |
| **Office Hour** | Monday 15:00-17:00 |
| **Messages to Prospective Students** | Think what is intelligence.  Please ask a question during a class period in public. |

## Cautions for Students