

Tamkang University Academic Year 112, 1st Semester Course Syllabus

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| Course Title | AI AND PROGRAMMING LANGUAGE | Instructor | TASUPALLI CHANDRASHEKHAR |
| Course Class | TRDXB1A DEPARTMENT OF DIPLOMACY AND INTERNATIONAL RELATIONS (ENGLISH-TAUGHT PROGRAM), 1A | Details | ♦ General Course ♦ Required ♦ One Semester |
| Relevance to SDGs | SDG4 Quality education SDG8 Decent work and economic growth SDG9 Industry, Innovation, and Infrastructure SDG12 Responsible consumption and production | | |
| D e p a r t m e n t a l A i m o f E d u c a t i o n | | | |
| I . Develop students' basic literacy of information technology. II. Establish students' ability to apply information technology. III. Build students' information ethics. IV. Train students' reflections on information-related issues. | | | |
| Subject Schoolwide essential virtues | | | |
| 1. A global perspective. (ratio:10.00) 2. Information literacy. (ratio:30.00) 3. A vision for the future. (ratio:10.00) 4. Moral integrity. (ratio:20.00) 5. Independent thinking. (ratio:10.00) 6. A cheerful attitude and healthy lifestyle. (ratio:5.00) 7. A spirit of teamwork and dedication. (ratio:10.00) 8. A sense of aesthetic appreciation. (ratio:5.00) | | | |

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| Course Introduction | In this course, you will explore the exciting field of Artificial Intelligence and learn how to program using an AI-specific language. From understanding fundamental concepts to implementing machine learning algorithms and neural networks, you'll gain the skills needed to develop AI applications. Get ready for hands-on projects, debugging challenges, and discussions on ethical considerations. Join us on this journey of exploring AI and its impact on the world of programming. Let's dive in! |
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The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

- I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.
- II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.
- III.Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

| No. | Teaching Objectives | objective methods |
|-----|---|-------------------|
| 1 | Familiarity with the language: Ensure students understand the basics of the AI programming language, including its purpose, features, and applications. Familiarize them with the syntax, keywords, and conventions specific to the language. | Cognitive |
| 2 | Programming concepts: Teach fundamental programming concepts such as variables, data types, operators, control structures (e.g., loops, conditionals), functions, and object-oriented programming principles. Explain how these concepts apply to AI programming tasks. | Affective |
| 3 | Continuous learning: Instill a mindset of continuous learning by introducing students to additional resources, such as online tutorials, documentation, research papers, and relevant AI communities. Encourage them to stay updated with advancements in AI and explore further beyond the basics of the programming language. | Psychomotor |

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

| No. | Core Competences | Essential Virtues | Teaching Methods | Assessment |
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| 1 | | 12345678 | Lecture, Discussion, Publication, Practicum, Experience, Imitation | Testing, Study Assignments, Discussion(including classroom and online), Practicum, Report(including oral and written), Activity Participation |
| 2 | | 12345678 | Lecture, Discussion, Experience, Imitation | Testing, Report(including oral and written), Activity Participation |
| 3 | | 12345678 | Lecture, Discussion, Experience, Imitation | Testing, Study Assignments, Discussion(including classroom and online), Activity Participation |

| Course Schedule | | | | |
|-----------------|--------------------------|---|--|------|
| Week | Date | Course Contents | | Note |
| 1 | 112/09/11 ~ 112/09/17 | Introduction and History of AI | | |
| 2 | 112/09/18 ~ 112/09/24 | Symbolic AI | | |
| 3 | 112/09/25 ~ 112/10/01 | Knowledge Representation and Expert Systems | | |
| 4 | 112/10/02 ~ 112/10/08 | Introduction to Neural Networks | | |
| 5 | 112/10/09 ~ 112/10/15 | Multi-Layered Perceptron and Creating our own Framework | | |
| 6 | 112/10/16 ~ 112/10/22 | Intro to Frameworks (PyTorch/TensorFlow) and Overfitting | | |
| 7 | 112/10/23 ~ 112/10/29 | Computer vision | | |
| 8 | 112/10/30 ~ 112/11/05 | Convolutional Neural Networks CNN Architectures | | |
| 9 | 112/11/06 ~ 112/11/12 | AI Ethics and Responsible AI | | |
| 10 | 112/11/13 ~ 112/11/19 | | | |
| 11 | 112/11/20 ~ 112/11/26 | | | |
| 12 | 112/11/27 ~ 112/12/03 | | | |
| 13 | 112/12/04 ~ 112/12/10 | | | |
| 14 | 112/12/11 ~ 112/12/17 | | | |
| 15 | 112/12/18 ~ 112/12/24 | | | |
| 16 | 112/12/25 ~ 112/12/31 | | | |

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| 17 | 113/01/01 ~ 113/01/07 | | |
| 18 | 113/01/08 ~ 113/01/14 | | |
| Key capabilities | self-directed learning International mobility Information Technology Problem solving Interdisciplinary | | |
| Interdisciplinary | STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist) Competency-based education 'competency exploration' sustained competency or global issues STEEP (Society, Technology, Economy, Environment, and Politics) In addition to teaching content of the teacher's professional field, integrate other subjects or invite experts and scholars in other fields to share knowledge or teaching | | |
| Distinctive teaching | USR curriculum Game-based learning courses Project implementation course Collaborative teaching (multiple teachers and business teachers in the school) course Learning technologies (such as AR/VR,etc.) incorporated to physical courses | | |
| Course Content | Computer programming or Computer language (students have hands-on experience in related projects) Logical Thinking AI application | | |
| Requirement | Problem-solving skills with the weekly homework as 40% of the usual evaluation marks. | | |
| Textbooks and Teaching Materials | Self-made teaching materials:Textbooks, Presentations, Handouts, Worksheets Using teaching materials from other writers:Textbooks Name of teaching materials: starting out with python Fifth edition Tony Gaddis | | |
| References | | | |
| Grading Policy | ◆ Attendance : 10.0 % ◆ Mark of Usual : 30.0 % ◆ Midterm Exam : 30.0 % ◆ Final Exam : 30.0 % ◆ Other () : % | | |
| Note | This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php . ※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications. | | |