

ITMD 446 SYLLABUS

ITMD 446 Web Microservices and APIs

Hours: 3 credit hours / 45 contact hours

Instructor: Karl Stolley

Textbook, title, author, and year:

- a. *Design and Build Great Web APIs*, Admundsen, M, 2020.

Specific course information:

- a. Catalog description: This course covers fundamental principles and methods for programmatically accessing and parsing data returned by internet-available data APIs. The course guides students in carefully examining the structure of API endpoints expressed as URLs and the conventions of RESTful architecture.
- b. **Prerequisites:** ITMD 441.

Specific goals for the course

a. Course Outcomes:

Students completing this course will learn to:

- Develop familiarity with the key principles of Application Programming Interfaces, for both programming languages and data/software services, and as both a consumer and producer of APIs
- Develop critical reading skills for navigating and comprehending the documentation for APIs
- Understand and apply progressive enhancement and responsive design in any user-facing web design and development
- Develop an agile approach to digital development, supplemented by the use of a version control system (Git)

c. Course student outcomes:

At the conclusion of this course, successful students will be able to:

- Learn to locate, read, and act in accordance with Web API providers' terms of service
- Understand and employ lightweight data serialization formats (e.g., JSON) on both the client- and server-side
- Understand and implement web standards from the World Wide Web Consortium (W3C), Ecma, ISO, and other standards-issuing groups

Topics to be covered:

- a. Request/Response and RESTful Architecture
- b. API Structure and Endpoints
- c. API Documentation
- d. Data Serialization Formats I: CSV, XML
- e. Data Serialization Formats II: JSON, JSONP
- f. Asynchronous Requests
- g. CORS Restrictions
- h. Validating Data Integrity
- i. From Consuming to Publishing APIs
- j. API-First Design
- k. Evaluating End-User/Consumer Needs
- l. Serving APIs: CORS Configuration
- m. Versioning API URLs and Schema
- n. Restrictive Access Strategies
- o. Client- and Server-Side Storage and Caching