POLITEKNIK NEGERI MALANG

DEPARTMENT OF INFORMATION TECHNOLOGY

STUDY PROGRAM : D4 INFORMATICS ENGINEERING

SEMESTER LEARNING PLAN (RPS)

COURSES	CODE	LECTURE POINTS CLUMPS	CREDIT (sks)/hour	SEMESTER	COMPILATION DATE
Advanced Web Programming	**RTI234007**	Basic Informatics	3 credits / 6 hours	4	January 31, 2024
	Areas of Expertise Coordinator			**Head of Study Program**	
	Vivi Nur Wijayaningrum, S.Kom, M.Kom			Ely Setyo Astuti, S.T.,M.T	

Learning Outcomes

Graduate learning outcomes charged in the course

- **S8** Internalize academic values, norms, and ethics.
- **S9** Show an attitude of responsibility for work in their field of expertise independently.
- **PP2** Mastering ICT product development methods to provide appropriate solutions through one or more application domains.
- **KK1** Able to apply applied mathematics, computational knowledge (Algorithms, Programming and Databases), engineering science, and engineering principles in the field of software development (desktop, web and mobile), computer networks and other ICT / IPTEKS fields (vision – graphics, embeded, Information Systems, Intelligent systems, Business Intelligence, etc.).
- **KU1** Able to apply logical, critical, innovative, quality, and measurable thinking in doing specific work in their field of expertise and in accordance with work competency standards in the field concerned.
- **KU2** Able to show independent, quality and measurable performance.

Learning Objectives

	TB1 Able to master the method of developing website-based applications as a solution to solving problems **TB2** Able to apply website-based application development tools using the Web Framework with logical, critical, and measurable thinking **TB3** Able to create quality website-based applications, with a responsible attitude, and pay attention to academic values, norms, and ethics
Course Brief Description	This course provides understanding and mastery of the concept and use of web frameworks.
Learning Material / Subject	1. Web Framework Basic 2. MVC 3. Authentication 4. Object Relational Mapping (ORM) 5. CRUD 6. RESTful API.
Book	**Main:** *Muhammad Azamuddin, Hafid Mukhlasin, 2019. Laravel the PHP framework for web artisans, Kungfu Koding.* **Supporter:** 1. *Laravel Documentation - https://laravel.com/docs/10.x* 2. Dayle Rees, 2016. Laravel: Code Smart. Leanpub
Learning Media	**Software :** 1. PHP 2. MySql 3. Laravel 10 4. Composer 5. Git **Hardware :** PC/Laptop
Name of Lecturer	1. Endah Septa Sintiya. SPd., MKom. 2. Wilda Imama Sabilla, S.Kom., M.Kom. 3. M. Hasyim Ratsanjani SKom., MKom. 4. Muhammad Unggul Pamenang, S.ST., M.T.
Prerequisite courses	-

Week	Planned final capabilities (Sub-CP-MK)	Study material (Learning Materials)	Learning Modalities, Forms, Strategies, and	Time Estimation	Student Learning Experience	Criteria & Forms of Assessment	Assessment Indicators	Weight (%)

			Methods (Media and Learning Resources)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	- Students are able to **understand** the concept of Web Framework (C2) - Students are able to **install** Web Framework (C1) Students are able to **understand the** structure of the Web Framework (C2)	Web Framework: ● Web Framework Introduction ● Web Framework installation ● Web Framework Structure ● MVC concept ● Version Control installation (git & github) and Git Forks ● Laragon Installation (Web Server) ● Database management application ● Intalasi Text Editor	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id ***Assignment:*** ***Task 1****: Install the Web Framework and observe the structure of the Web Framework (4x50')* *Offline*	**BT** : 1x2x50' **PT:** 1x2x60' **M:** 1x2x50'	By studying the Web Framework students can: 1. Understand Web Framework concepts 2. Installing Web Framework 3. Understand the structure of the Web Framework	**Criterion:** Assessment criteria rubric **Form of assessment:** ● Practicum ● Discussion activity includes asking and answering (affective)	● Know about web framework concepts ● Complete the web framework installation process ● Understand the structure of web frameworks	5%
2	- Students **understand** the concept of Web Framework (C2) routing - Students **implement** routing in the Web Framework (C3) - Students **understand** the concept of controller (C2) - Students are able to **implement** controllers	Controller, Routing, view: - Understanding of routing - Routing implementation - Understanding of controllers - Introduction to View	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:**	**BT:** 1x2x50' **PT:** 1x2x60' **M:** 1x2x50'	By studying Controller &; Routing, students can: 1. Understand the concept of routing web framework 2. Implement a web routing framework 3. Understanding web framework controllers	**Criterion:** Accuracy and mastery **Form of assessment:** ● Practicum ● Discussion activity includes asking and	● Know about web routing framework concepts ● Complete the web routing framework creation process ● Know the web framework controller ● Complete the creation of the web framework controller	5%

	in the Web Framework (C3) - Students understand the concept of view (C2)		*Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 2**: Create a static web case study *Company Profile* (4x50') *Offline*		4. Implement the web controller framework	answering (affective)		
3	- Students are able to **understand the** concept of the model in the Web Framework (C2) - Students are able to **make connections** to databases (C3) - Students are able to **create** schema migrations (C3) - Students are able to **make** use of the query builder (C3) - Students are able to **make** use of DB façade (C3)	Migration and database - Introduction to the model - Introduction to migration - Introduction to seeding - Introduction to query builder - Introduction to DB facade	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 4**: *Point of Sales (POS*) development using data connected to database (4x50') *Offline*	**BT:** 1x2x50' **PT:** 1x2x60' **M:** 1x2x50'	By studying the Web Framework model students can: 1. Understand web framework model concepts 2. Create a connection to the database 3. Create seeder schema migrations 4. Make use of Query Builder 5. create a DB utilization façade	**Criterion:** Accuracy and mastery **Form of assessment:** ● Practicum ● Discussion activity includes asking and answering (affective)	● Know about web framework model concepts ● Complete establishing a connection to the database ● Complete schema migration creation ● Complete seeder creation	5%

4	- Students **understand the** concept of Models in the Web Framework (C2) - Students are able to apply the Eloquent ORM Web Framework (C3)	Type - Model Introduction - Introduction to Eloquent ORM	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 3**: Model modification of *Point Of Sales* case study using template engine (4x50') *Offline*	**BT:** 1x2x50' **PT:** 1x2x60' **M:** 1x2x50'	By studying the view students can: 1. Understand web framework model concepts 2. Implementing the Eloquent ORM Web Framework	**Criterion:** Accuracy and mastery **Form of assessment:** ● Practicum ● Discussion activity includes asking and answering (affective)	● Know about the concept of view web framework ● Complete template engine deployment on view web framework ● Complete the layout process in the view web framework	5%
5	- Students are able to *layout* the Web Framework (C3) view - Students are able to **apply** from blade view (C3) - Students are able to apply datatables in the web framework (C6)	**Templating and datables** - Introduction to templating engines - Introduction to Blade view - Introduction to datatables	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector	**BT:** 1x2x50' **PT:** 1x2x50' **M:** 1x2x50'	By studying the view students can: 3. Understand web framework model concepts 4. Implementing the Eloquent ORM Web Framework	**Criterion:** Accuracy and mastery **Form of assessment:** ● Practicum ● Discussion activity includes asking and answering (affective)	Quiz	10%

			Learning resources: E-learning lms.polinema.ac.id **Assignment:** **Task 3**: Modify templating and datatables in *Point Of Sales* case study using template engine (4x50') *Offline*					
6	- Students **understand the** concept of forms with the Web Framework (C2) - Students are able to **create a** registration login form (C6) - Students are able to **create a** validation form (C6) - Students **understand** the concept of CRUD Web Framework (C2)	Form: - Registration Form - Form Login - Form Validation - Introduction to CRUD	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 5**: Apply form to web admin case study by adding registration and validation form and login form (4x50') *Offline*	**BT:** 1x2x50' **PT:** 1x2x50' **M:** 1x2x50'	By learning about web framework authentication, students can: 1. Understand web framework authentication concepts 2. Create a registration form 3. Create a login form	**Criterion:** Accuracy and mastery **Form of assessment:** ● Practicum ● Discussion activity includes asking and answering (affective)	● Know about web framework authentication concepts ● Complete the creation of the registration form ● Complete the login form creation	5%
7	- Students **understand** display errors (C2)	Display errors and advanced CRUDs:	**Modalities:** Blended Learning	**BT:** 1x2x50'	By studying web frameworks students can:	**Criterion:** Accuracy and mastery	● Know about the concept of ORM web framework	5%

	- Students understand the concept of process debugging (C2) - Students are able to **perform** advanced CRUD surgery (C6)	- Introduction to display errors - Introduction of debugging process - Advanced advanced CRUD operations	**Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 6**: Implement advanced CRUD error display and debugging process in Web Framework with web admin case study (4x50') *Offline*	**PT:** 1x2x50' **M:** 1x2x50'	1. Understand the concept of web framework display errors 2. Understand the concept of process debugging 3. Perform advanced CRUD operations	**Form of assessment:** ● Practicum ● Discussion activity includes asking and answering (affective)	● Complete CRUD operations with ORM	
8	- Students are able to create a page to login, CRUD in the MVC concept **for specified project-based learning** (C6)	UTS / MID EXAM	Test	1 x 6 x 50"	UTS / MID EXAM	UTS / MID EXAM	UTS / MID EXAM	15%
9	- Students are able to **understand** the concept of authentication (C2) - Students are able to **understand** the concept of authorization (C2) - Students are able to **understand** the	**Authentication dan Authorization :** - Introduction to Authentication - Introduction to Authorization - Draft middleware	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:**	**BT:** 1x2x50' **PT:** 1x2x50' **M:** 1x2x50'	By studying web frameworks students can: 1. Understand the concept of authentication 2. Understand the concept of authorization	**Criterion:** Accuracy and mastery **Form of assessment:** ● Practicum ● Discussion activity includes asking and	● Complete user management creation ● Complete data management creation	5%

	concept of middleware (C2)		*Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 7**: Create web authentication, authorization, middleware features on web POS (4x50') *Offline*		3. Understand the concept of middleware	answering (affective)		
10	- Students **understand** the concept of API Server(C2) - Students are able to **build** token authentication on API Server (C3) - Students are able to **build** CRUD with RESTful API (C3)	API Server: - Introduction to API Server - Authenticate with RESTful API tokens - Build the CRUD RESTful API	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 9**: Build an API Server project (4x50') *Offline*	**BT:** 1x2x50' **PT:** 1x2x50' **M:** 1x2x50'	By studying the RESTful API students can: 1. Understand RESTful API concepts 2. Build token authentication on the RESTful API 3. Build a CRUD with a RESTful API	**Criterion:** Accuracy and mastery **Form of assessment:** ● Practicum ● Discussion activity includes asking and answering (affective)	● Know about RESTful API concepts ● Complete token authentication build on RESTful API ● Complete CRUD build with RESTful API	5%

11	- Students **understand** advanced concepts of API Server (C2) - Students are able to **build** token authentication on RESTful API (C3) - Students are able to **build** CRUD with RESTful API (C3)	API Server: - RESTful API - Authenticate with RESTful API tokens - Build an advanced CRUD RESTful API	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 9**: Build an Offline RESTful API project (4x50')	**BT:** 1x2x50' **PT:** 1x2x50' **M:** 1x2x50'	By studying the RESTful API students can: 4. Understand RESTful API concepts 5. Build token authentication on the RESTful API 6. Build a CRUD with a RESTful API	**Criterion:** Accuracy and mastery **Form of assessment:** ● Practicum ● Discussion activity includes asking and answering (affective)	● Know about RESTful API concepts ● Complete token authentication build on RESTful API ● Complete CRUD build with RESTful API	5%
12	- Students continue the project and complete it with API functions for **project-based learning** specified with starter code (C6)	Project	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:**	1 x 6 x 50"	Quiz	Quiz	Quiz	5%

			E-learning lms.polinema.ac.id **Assignment:** **Task 11**: Build projects in batches based on selected case studies (6x50') *Offline*					
13 – 16	- Students **build** projects based on selected case studies (C6)	Project	**Modalities:** Blended Learning **Form:** Practicum **Learning Strategies:** contextual learning and assignment **Method:** *Discussion methods* *Demonstration method* **Media**: Computer, Projector **Learning resources:** E-learning lms.polinema.ac.id **Assignment:** **Task 11**: Build projects in batches based on selected case studies (4x50') *Offline*	**BT:** 1x2x50' **PT:** 1x2x50' **M:** 1x2x50'	Project	**Criterion:** Accuracy and mastery **Form of assessment:** ● Practicum ● Project suitability to case studies ● Completion of project features according to case studies	● Complete project construction based on selected case studies	15%
17	- Students disseminate **project based learning** that has been done (C3)	UAS / FINAL EXAM	UAS / FINAL EXAM	1 x 6 x 50"	Presentation	Project presentation	Presentation	25%

Information:

ASSESSMENT AND EVALUATION PLAN

Week To	Sub-CP-MK	Language Tree	Forms of Assessment	Weight
1	- Students are able to understand the concept of Web Framework (C2) - Students are able to install Web Framework (C1) - Students are able to understand the structure of the Web Framework (C2)	Web Framework: - Web Framework Introduction - Web Framework installation - Web Framework Structure - MVC concept - Version Control installation (git & github) and Git Forks - Laragon Installation (Web Server) - Database management application - Text Editor		Task 1: 5% Task 2: 5% Task 3: 5% Task 4: 5% Task 5: 5% Task 6: 5% Task 7: 5% UTS / MID EXAM: 15%
2	- Students understand the concept of Web Framework (C2) routing - Students implement routing in the Web Framework (C3) - Students understand the concept of controller (C2) - Students are able to implement controllers in the Web Framework (C3) - Students understand the concept of view (C2)	Controller, Routing, view: - Understanding of routing - Routing implementation - Understanding of controllers - Introduction to View		
3	- Students are able to understand the concept of the model in the Web Framework (C2) - Students are able to make connections to databases (C3) - Students are able to create schema migrations (C3) - Students are able to make use of the query builder (C3) - Students are able to make use of DB façade (C3)	Migration and database - Introduction to the model - Introduction to migration - Introduction to seeding - Introduction to query builder - Introduction to DB facade -		
4	- Students understand the concept of Models in the Web Framework (C2)	Type: - Introduction of Advanced models - Introduction to Eloquent ORM		

	- Students are able to apply the Eloquent ORM Web Framework (C3)			
5	- Students are able to layout the Web Framework (C3) view - Students are able to apply from blade view (C3) - Students are able to apply datatables in the web framework (C6)	Templating and datables - Introduction to templating engine - Introduction to Blade view - Introduction to datatables		
6	- Students understand the concept of forms with the Web Framework (C2) - Students are able to create a registration login form (C6) - Students are able to create a validation form (C6) - Students understand the concept of CRUD Web Framework (C2)	Form: - Registration Form - Form Login - Form Validation - Introduction to CRUD		
7	- Students understand display errors (C2) - Students understand the concept of process debugging (C2) - Students are able to perform advanced CRUD surgery (C6)	Display errors and advanced CRUDs: - Introduction to display errors - Introduction of debugging process - Advanced advanced CRUD operations		
8	**UTS / MID EXAM**			
9	- Students are able to understand the concept of authentication (C2) - Students are able to understand the concept of authorization (C2) - Students are able to understand the concept of middleware (C2)	Authentication dan Authorization : - Introduction to Authentication - Introduction to Authorization - Draft middleware		Task 8: 5% Task 9: 5% Task 10: 5% Task 11: 5% Task 12: 5% Tugas progress project (13-16): 15% UAS / FINAL EXAM: 10%
10	- Students understand the concept of API Server(C2) - Students are able to build token authentication on API Server (C3) - Students are able to build CRUD with RESTful API (C3)	API Server: - Introduction to API Server - Authenticate with RESTful API tokens - Build the CRUD RESTful API		
11	- Students understand advanced concepts of API Server (C2)	API Server: - Advanced RESTful API Server		

	- Students are able to build token authentication on RESTful API (C3) - Students are able to build CRUD with RESTful API (C3)	- Authenticate with RESTful API tokens - Build an advanced CRUD RESTful API		
12	- Students continue the project and complete it with API functions for project-based learning specified with starter code (C6)	Project dengan starter code		
13 - 16	Students **build** projects based on selected case studies (C6)	Project		
17	**UAS / FINAL EXAM**			
TOTAL WEIGHT				**100%**

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STUDY PROGRAM : D4 INFORMATICS ENGINEERING

ASSESSMENT METHODS

COURSES	Advanced Web Programming				
CODE	**RTI234007**	**BOBOT (sks) / jam**	3 credits / 6 hours	**SEMESTER**	4
LECTURER	1. Endah Septa Sintiya. SPd., MKom. 2. Wilda Imam Sabilla, S.Kom., M.Kom. 3. M. Hasyim Ratsanjani SKom., MKom. 4. Muhammad Unggul Pamenang, S.St., M.T.				

FORM OF ASSESSMENT

Midterm Exam (UTS / MID EXAM)

ASSESSMENT TITLE

Implementation of authentication, login, CRUD in defined project based learning MVC concepts

SUB LEARNING OUTCOMES OF COURSES

- Students understand the concept of authentication with Web Framework (C2)
- Students are able to create a registration form (C6)
- Students are able to create a login form (C6)
- Students understand the concept of ORM (C2)
- Students are able to perform CRUD surgery with ORM (C6)
- Students are able to create case studies (C6)

DESCRIPTION

- Develop applications according to the project provided in the form of adding or improving functions for authentication, CRUD features with ORM and other features / menus that will add to the benefits of the web-based application built. The complexity of the feature/function affects the assessment. Apply authentication and CRUD features with ORM to a simple case study.

WORKING METHOD

1. The project name UTS / MID EXAM_NIM1_NIM2, example: UTS / MID EXAM_193171XXXX
2. Projects are carried out in groups, where one group consists of 2 students
3. The uploaded project is 1 document file (UTS / MID EXAM_NIM) containing an account link and project repository on Github

EXTERNAL FORMAT FORM

A. Work Object: Application progress (PBL) with specification of authentication, login, CRUD features.
B. Output Form: report contains program code and screenshots of web pages in A4 paper size PDF format. The student's name, NIM, and class are written on the top left. Systematize file names is UTS / MID EXAM_NIM1_NIM2

INDICATORS, CRITERIA AND ASSESSMENT WEIGHTS

Report format structure : 10%
Implementation suitability : 50%
Case study accuracy : 40%

UTS / MID EXAM assessment weighting is 10% of 100% assessment of this course

SCHEDULE

Week 8	1 week

OTHER REQUIRED:

BOOK

1. *Muhammad Azamuddin, Hafid Mukhlasin, 2019. Laravel the PHP framework for web artisans, Kungfu Koding.*

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STUDY PROGRAM : D4 INFORMATICS ENGINEERING

ASSESSMENT METHODS

COURSES	Advanced Web Programming				
CODE	**RTI234007**	**BOBOT (sks) / jam**	3 credits / 6 hours	**SEMESTER**	4
LECTURER	1. Endah Septa Sintiya. SPd., MKom. 2. Wilda Imam Sabilla, S.Kom., M.Kom. 3. M. Hasyim Ratsanjani SKom., MKom. 4. Muhammad Unggul Pamenang, S.St., M.T.				

FORM OF ASSESSMENT

Final Semester Test (UAS / FINAL EXAM)

ASSESSMENT TITLE

Dissemination of **project based learning** that has been done

SUB LEARNING OUTCOMES OF COURSES

- Students understand the concept of authentication with Web Framework (C2)
- Students are able to create a registration form (C6)
- Students are able to create a login form (C6)
- Students understand the concept of ORM (C2)
- Students are able to perform CRUD surgery with ORM (C6)
- Students are able to create case studies (C6)

DESCRIPTION

- Dissemination of work results according to the project based learning provided

WORKING METHOD

1. The project name UTS / MID EXAM_NIM1_NIM2, example: UTS / MID EXAM_193171XXXX
2. Projects are carried out in groups, where one group consists of 2 students
3. The uploaded project is 1 document file (UAS / FINAL EXAM_NIM) containing an account link and project repository on Github

EXTERNAL FORMAT FORM

A. Work Object: Web Application

B. Output Form: report contains program code and screenshots of web pages in A4 paper size PDF format. The student's name, NIM, and class are written on the top left. Systematize file names is UAS / FINAL EXAM_NIM1_NIM2

INDICATORS, CRITERIA AND ASSESSMENT WEIGHTS

Report format structure	: 10%
Implementation suitability	: 50%
Case study accuracy	: 40%

The assessment weight of UAS / FINAL EXAM is 20% of the 100% assessment of this course

SCHEDULE

Week 17	1 week

OTHER REQUIRED:

BOOK

Muhammad Azamuddin, Hafid Mukhlasin, 2019. Laravel the PHP framework for web artisans, Kungfu Koding.