CSE6214 SOFTWARE ENGINEERING FUNDAMENTALS
OCT / NOV 2025 (TERM2530)
PROJECT DESCRIPTION

Significant Dates:

- Group formation : 3 Nov – 16 Nov 2025, 11:59 PM (Week 01- 02)
- Submission Project
  - Part I (Project Planning / Requirements Analysis) : 14 Dec 2025, 11:59 PM (Week 06)
  - Part II (Design / Architecture / Interfaces / Database) : 25 Jan 2026, 11:59 PM (Week 12)
  - Part III (Development / Testing / Project Monitoring & Reporting) : 8 Feb 2026, 11:59 PM (Week 14)
- Presentation : 3 – 6 Feb 2026 (Week 14)

* Please strictly adhere to the important dates above.
* * A kind reminder for every student that **a penalty for late submission** could be applied – deduction of 10 marks for each day

Instructions:

Students need to form a group of **3** to 4 from the **SAME TUTORIAL** section. Students are required to produce and submit documentation on requirements, design and implementation (prototype) of a system. Project rubrics for Part I, Part II and Part III are detailed on pages 6, 7 and 8, respectively. The project titles are assigned based on tutorial sections, listed as follows:

Tutorial Section	Project Title	Key Processes
TT1L (Dr. Mohana)	Smart Classroom Attendance & Analytics System	**Users (3–4 users):** Lecturer, Student, Admin, Programme Coordinator **Key Processes:** • User Registration and Authentication (Lecturer, Student, Admin, Programme Coordinator) • Class and Timetable Management • Attendance Recording via QR Code or Geolocation • Absence and Late Marking Automation • Attendance Analytics Dashboard (for lecturers and admin) • Export Reports (Attendance Summary per Course / Student) • Notification Module (Reminders for Low Attendance) • System Settings and User Management (Admin)
TT2L (Dr. Mohana)	Community Blood Donation Coordination App	**Users (3–4 users):** Donor, Hospital/Clinic, Event Organizer, Admin **Key Processes:** • User Registration and Authentication (Donor, Organizer, Admin) • Donor Profile & Health Eligibility Management • Event and Campaign Management (Scheduling, Venue, Slots)

		• Appointment Booking and Confirmation • Real-Time Inventory of Blood Types • Push Notifications for Urgent Requests • Analytics and Reports on Donor Activity • Feedback & Rating Events
TT3L **(Dr. Mohana)**	Digital Vehicle Maintenance & Service Tracker	**Users (3–4 users):** Vehicle Owner, Mechanic/Workshop, Admin **Key Processes:** • User Registration and Authentication (Owner, Mechanic, Admin) • Vehicle Profile Management (Make, Model, Mileage, Service Records) • Service Scheduling and Booking • Maintenance Record Management (Parts Used, Service Type, Cost) • Notifications (Upcoming Service Due Dates) • Invoice and Payment History Tracking • Workshop Dashboard with Service Statistics • Admin Report Generation and System Maintenance
TT4L **(Dr. Mohana)**	Campus Eco-Club Sustainability Tracker	**Users (3–4 users):** Student Member, Event Organizer, Admin, Volunteer **Key Processes:** • User Registration and Authentication (Member, Organizer, Admin) • Event Planning and Registration (Clean-up Drives, Awareness Campaigns) • Eco Points System (Track Participation, Reward Engagement) • Recycling Log Submission (Images, Category, Weight) • Leaderboard and Achievements (Gamification) • Reports and Statistics (Total Waste Collected, Volunteer Hours) • Notifications and Updates on Upcoming Events • Admin Dashboard for Data Verification and Reports
TT5L **(Dr. Zuriani)**	Internship Placement & Tracking System	**Users (3–4 users):** Student, Company Supervisor, Academic Supervisor, Admin **Key Processes:** • User Registration and Authentication • Internship Application & Matching • Logbook & Daily Task Submission • Evaluation & Feedback Forms • Attendance & Progress Tracking • Notifications (Deadlines, Missing Reports) • Dashboard (Performance Analytics, Placement Summary)

TT6L **(Dr. Zuriani)**	Smart Hostel Management System	**Users (3–4 users)**: Student, Warden, Maintenance Staff, Admin **Key Processes:** • User Registration and Authentication • Room Booking & Allocation • Maintenance Request Management • Visitor Registration & Tracking • Violation/Incident Reporting • Notification (Due Rent, Maintenance Updates) • Dashboard (Occupancy, Maintenance Analytics)
TT7L **(Dr. Zuriani)**	Research Grant Management System	**Users (3–4 users)**: Researcher, Reviewer, Head of Department, Admin **Key Processes:** • User Registration and Authentication • Proposal Submission and Review • Grant Allocation & Budget Tracking • Progress Report Submission • Document Version Control • Notification for Deadlines and Approvals • Dashboard (Funding Status, Research Output)
TT8L **(Dr. Zuriani)**	Academic Publication and Research Tracking System	**Users (3–4 users)**: Lecturer/Researcher, Student, Programme Coordinator, Admin **Key Processes**: • User Registration and Authentication (Lecturer, Student, Admin) • Publication Entry & Management (Journal, Proceeding, Book Chapter, etc.) • Upload Proof (DOI, Acceptance Letter, PDF) • Verification & Approval (by Programme Coordinator/Admin) • Analytics Dashboard (Publication by Year, Type, Author, Index) • Export Reports (Faculty/Department KPI, Individual Summary) • Notification Module (Missing Data, Verification Reminder) • Research Profile (Linked to ORCID, Google Scholar) • System Settings & User Management (Admin)
TT9L **(Mr. Jamal Arshad)**	Alumni Engagement and Networking System	**Users:** Alumni, Student, Career Services Officer, Admin **Key Processes:** • User Registration and Authentication • Alumni Profile and Career Updates • Event Management (Reunions, Talks, Webinars) • Job Posting and Mentorship Matching • Feedback and Testimonials • Notification Module (Event Reminders, New Opportunities) • Dashboard (Engagement Metrics, Alumni Contributions)
T10L **(Mr. Jamal Arshad)**	Campus Shuttle Scheduling and Tracking System	**Users:** Student, Driver, Transport Coordinator, Admin **Key Processes:**

		• User Registration and Authentication • Shuttle Route and Schedule Management • Real-Time Location Tracking • Booking and Seat Reservation • Incident Reporting (Delays, Accidents) • Notification Module (Arrival Alerts, Route Changes) • Dashboard (Usage Statistics, Route Efficiency)
T11L **(Mr. Jamal Arshad)**	Digital Scholarship Application and Tracking System	**Users:** Student, Scholarship Committee, Reviewer, Admin **Key Processes:** • User Registration and Authentication • Scholarship Listing and Eligibility Checker • Application Submission with Document Upload • Review and Scoring Workflow • Notification Module (Application Status, Deadlines) • Dashboard (Application Volume, Award Statistics) • Admin Settings (Scholarship Criteria, Reviewer Assignment)
T12L **(Mr. Jamal Arshad)**	Smart Waste Collection and Recycling System	**Users:** Resident, Waste Collector, Municipal Admin **Key Processes:** • User Registration and Authentication • Waste Pickup Scheduling and Route Optimization • Recycling Log Submission (Type, Weight, Image) • Reward System for Recycling Participation • Notification Module (Pickup Reminders, Recycling Tips) • Dashboard (Waste Volume, Recycling Rate) • Admin Settings (Zone Management, Collector Assignment)
T13L **(AP Dr. Chua Fang Fang)**	Digital Peer Support System	**Users (3–4 users):** User, Admin, Moderator, Counselor **Key Processes:** • User Profile Management • Experiences sharing/Peer support/feedback sessions • Peer matching (interest-based, goals-based, etc) • Chat/Discussion forum • Well-being/mood patterns tracking • Gamification • Moderator Dashboard (flagged content, verify peer supporters, analytics)
T14L **(AP Dr. Chua Fang Fang)**	Campus Security and Emergency Management System	**Users (3–4 users):** Student, Staff, Visitor, Admin, Security Staff **Key Processes:** • User Profile Management • Emergency alert

		• Incident reporting and tracking • Location Tracking • Messaging • Dashboard (Analytics and Reporting)
T15L **(AP Dr. Chua Fang Fang)**	Campus Event Scheduling and Space Management System	**Users (3–4 users):** Student, Faculty, Event Organizer, Admin, Guest **Key Processes:** • User Profile Management • Event Scheduling and Management • Space and Resource Allocation/Management (booking, track availability) • Notifications • Dashboard (Analytics and Reporting)
T16L **(Dr. Nicole)**	Staff Training and Certification Tracker	**Users (3–4 users):** HR Personnel (Admin), Head of Department, Training Provider, Employee **Key Processes:** • User Registration and Authentication (HR Personnel, Head of Department, Training Provider, Employee) • Training Schedule Management • Training Registration • Pre-Assessment and Post-Test Module • Post-Training Evaluation • Managing certificate expiry dates and automated reminders; Continuous Professional Development (CPD) Point Tracking • Attendance Recording via QR Code or Geolocation • Dashboard (Analytics and Reporting)
T17L **(Dr. Nicole)**	Project Bidding and Proposal Management System	**Users (3–4 users):** Project Lead, Content Coordinator (Admin), Executive Approver, Reviewer **Key Processes:** • User Registration and Authentication (Project Lead, Content Coordinator, Executive Approver, Admin) • Project Openings • Bid team setup and task assignment and deadlines • Assessment/ Review system • Document version control • Executive Approval • Dashboard (Analytics and Reporting) • System Settings and User Management

Note: Name your file in the following format:

Proj_Px_TTxL_Gx_stud1, stud2, stud3, stud4.pdf

Example:

Proj_Px_TT3L_G5_David, Edwin, Ella, Othman.pdf
Proj: Project.
Px: Project part: PI,PII, or PIII.
TTxL: your tutorial class code: TT1L, TT2L, TT3L, etc.
Gx: your group number.
stud: group member's name (short one, EX:Studname: **David** Fong Seow Kee)

CSE6214 SOFTWARE ENGINEERING FUNDAMENTALS
OCT / NOV 2025 (TERM2530)
PROJECT RUBRIC

Lecturer Name : _____ **Tutorial Section** : _____

Project Title : _____ **Presentation Date** : _____

Project Phase	Cognitive	Affective	Total
Project - Part 1 (20%)		NIL	
Project - Part II (20%)		NIL	
Project - Part III (30%)	NIL		
		Grand Total (70%)	

Signed by:

_____

(Lecturer's Name and Date)

CSE6214 SOFTWARE ENGINEERING FUNDAMENTALS
OCT / NOV 2025 (TERM2530)
COGNITIVE AND AFFECTIVE ASSESSMENT

Mark Distribution	Submission Type	Descriptive Elements	Weightage	Rate (0-5)	Total (Weightage * Rate)
Cognitive and Affective Components	Project – Part I Project Planning / Requirements Analysis (Documentation)	1) System Overview describes users, scenario, problems, & use cases. Use case diagram and descriptions reflect System Overview details. The process flow is clear in each use case.	1		
		2) Class diagram/ER diagram have the main entities.	1		
		3) All processes are related and integrated. Additional functions and innovations for a more complete and usable software.	1		
		4) Quality and correctness of Gantt chart, diagrams and notations / Clearly and coherently written academic discourse.	1		
	Project –Part II Design / Architecture / Interfaces / Database (Documentation)	1) Database design matches requirements.	1		
		2) Architecture design shows the structure of the solution. Additional modules and innovations for a more complete and usable software.	1		
		3) Processing described in sequence diagrams, activity diagrams, state transition diagrams and interface design matches the requirements.	1		
		4) Quality and Clarity of Documentation & Notations	1		
	Project - Part III Development / Testing / Project Monitoring & Reporting (Documentation + Video + Presentation)	1) Implementation and Technical Completeness	1		
		2) Software Testing Procedures and Strategies (Testing)	1		
		3) Documentation Clarity and Quality (Diagrams, Screens, User Guide)	1		
		4) Individual Contribution and Responsibility	1		
		5) Video - Screens & Explanation, Linking & Flow of system	1		
		6) Presentation - Clear Delivery of Ideas	1		
		Project I = Total (Weightage * Rate)		**Max (20%)**	
		Project II = Total (Weightage * Rate)		**Max (20%)**	
		Project III = Total (Weightage * Rate)		**Max (30%)**	
		GRAND TOTAL =		**Max (70%)**	

Note for Rate: 0-non existence, 1-very weak, 2-weak, 3-fair, 4-good, 5-excellent

COGNITIVE COMPONENT RUBRIC
PROJECT - PART I – PROJECT PLANNING / REQUIREMENTS ANALYSIS

Descriptive Elements	Very Weak (1)	Weak(2)	Fair(3)	Good(4)	Excellent(5)
1) System Overview describes users, scenario, problems, & use cases. Use case diagram and descriptions reflects System Overview details. The process flow is clear in each use case.	System Overview is very ambiguous, unreasonable users, unreasonable scenarios, and insufficient use cases. Use Case diagram and descriptions that solves only *5% of the problems*	System Overview is ambiguous, number of users is doubtful, unreasonable scenarios, and insufficient use cases. Use Case diagram and descriptions that solves *25% of the problems*	System Overview is almost clear, number of users, fair description of scenarios, and use cases. Use Case diagram and descriptions that solves *50% of the problems*	System Overview is clear, number of users, some good scenarios, and good use cases. Good Use Case diagram and descriptions that solves *80% of the problems*	System Overview is very clear, number of users, concrete scenarios, and concrete use cases. Comprehensive and complete Use Case diagram and descriptions that solve all problems. Very good self-explanatory diagrams.
2) Class diagram/ER diagram have the main entities	Class / ER diagrams have only *5% of the main entities*, diagrams are not understandable at all.	Class / ER diagrams have *25% of the main entities*, diagrams are not easy to understand.	Class / ER diagrams have *50% of the main entities*, self-explanatory diagrams.	Class / ER diagrams have *80% of the main entities*, good self-explanatory diagrams.	Class / ER diagrams have all the main entities, very good self-explanatory diagrams.
3) All processes are related and integrated. Additional functions and innovations for a more complete and usable software.	Processes are disparate and not integrated, basic functions with no innovations.	Processes are somewhat related but not well integrated, with little or no innovations.	Processes are integrated with some minor additional functions/innovation.	Processes are integrated with some additional useful functions/innovations.	Well integrated processes, with good additional functions and innovations for a complete and usable software.
4) Quality and correctness of Gantt chart, diagrams and notations / Clearly and coherently written academic discourse	Not able to draw Gantt chart, diagrams and write ideas clearly and coherently	Able to draw Gantt chart, diagrams and write ideas with limited clarity and coherence and require further improvements	Able to draw Gantt chart, diagrams and write ideas fairly coherently and clearly but require minor improvements	Able to draw Gantt chart, diagrams and write ideas coherently and clearly	Able to draw Gantt chart, diagrams and write ideas with excellent coherence and clarity

Note for Rate: 0 = non existing

PROJECT - PART II – DESIGN / ARCHITECTURE / INTERFACES / DATABASE

Descriptive Elements	Very Weak (1)	Weak(2)	Fair(3)	Good(4)	Excellent(5)
1) Database & Data Design Accuracy (Class Diagram, Data Dictionary, Schema Mapping)	Missing or irrelevant diagrams; does not match requirements; no explanation.	Incomplete diagrams; minimal linkage between entities/classes; unclear documentation	Functional but partially accurate diagrams; shows relationships and attributes with minor inconsistencies.	Accurate, well-structured diagrams; data elements consistent with SRS; good data dictionary and mapping.	Highly consistent, normalized, and logically complete data design with clear naming, mapping, and professional clarity.
2) System & Architectural Design Structure	Architecture unclear, missing layers/modules; no link to requirements; diagrams confusing or missing.	Partial structure with major missing elements; weak linkage to requirements; diagrams hard to interpret.	Reasonable architectural outline; basic linkage to requirements; understandable diagrams with minor issues.	Well-defined layered or modular structure; clear linkage to Part I requirements; coherent and labeled diagrams.	Comprehensive architecture with clear hierarchy, interfaces, and justifications; innovative design, professional diagrams.
3) Component and Behavioral Modeling (Sequence, State, Activity Diagrams, UI)	Diagrams missing or incorrect; little or no correspondence to use cases.	Partial set of diagrams; unclear flow; inconsistent with system requirements.	Basic but functional set of diagrams showing key interactions and logic flow.	Clear, accurate sequence, state, and activity diagrams covering all critical processes; consistent with requirements.	Comprehensive, precise, and well-integrated behavioral models showing correct logic, synchronization, and completeness.
4) Quality and Clarity of Documentation & Notations	Unclear, unstructured writing; diagrams are poorly labeled; missing citations or organization.	Some clarity but lacks structure, labeling, and academic formatting	Organized with moderate coherence and partial labeling; needs refinement.	Well-structured report with consistent terminology, properly labeled diagrams, and academic clarity.	Exceptionally coherent, professional, and visually organized documentation linking all parts seamlessly.

Note for Rate: 0 = non existing

AFFECTIVE COMPONENT RUBRIC
PROJECT PART III – DEVELOPMENT / TESTING / PROJECT MONITORING & REPORTING

Descriptive Elements	Very Weak (1)	Weak(2)	Fair(3)	Good(4)	Excellent(5)
1) Implementation and Technical Completeness	Implementation shows minimal or no working features. Poor understanding of environment setup or integration.	Partial implementation with limited or broken features. Weak integration between components.	Functional prototype with half of the features working; integration partially successful.	Fully functional module demonstrating all required features with minor bugs.	Robust, fully functional and well-integrated system with clear evidence of technical mastery.
2) Software Testing Procedures and Strategies (Testing)	Software Testing Procedures and Strategies is *demonstrated,* but the intent of finding *particular errors is very shallow/weak.*	Software Testing Procedures and Strategies is *demonstrated,* but the intent of *finding particular errors is shallow/weak.*	Software Testing Procedures and Strategies is *demonstrated, but in general, with unspecific intent* of finding errors.	Software Testing Procedures and Strategies is *demonstrated, but in general, with a specific* intent of finding particular errors.	Software Testing Procedures and Strategies is *demonstrated in detail, with a specific intent* of finding particular errors.
3) Documentation Clarity and Quality (Diagrams, Screens, User Guide)	Documentation is incomplete or confusing. Screens and diagrams missing or irrelevant.	Minimal documentation with poor formatting or unclear visuals.	Adequate documentation with moderate clarity and partial screen coverage.	Clear documentation with organized diagrams, labeled screens, and logical flow.	Exceptionally clear, complete, and professional documentation covering all diagrams, screens, and usage instructions.
4) Individual Contribution and Responsibility	Did not fulfill assigned responsibilities. Work not aligned with assigned module.	Limited contribution with poor ownership of tasks.	Adequate contribution meeting basic expectations.	Strong ownership of assigned work with proactive communication and timely completion.	Outstanding individual effort; went beyond assigned scope with leadership, initiative, and collaborative impact.
5) Video – Screens & Explanation, Linking & Flow of system	Video content has *5% of the screens, explanations, linking and flow* of the system, visual video contents are not understandable at all.	Video content has *25% of the screens, explanations, linking and flow* of the system, visual video contents are not easy to understand.	Video content has *50% of the screens, explanations, linking and flow* of the system, self explanatory visual video contents.	Video content has *80% of the screens, explanations, linking and flow* of the system, good clear and self explanatory visual video contents.	Video content has *all the screens, explanations, linking and flow* of the system, very clear and self explanatory visual video contents.
6) Presentation - Clear Delivery of Ideas	Not able to deliver ideas clearly and require major improvements	Able to deliver ideas and require further improvements	Able to deliver ideas fairly clearly and require minor improvements	Able to deliver ideas clearly	Able to deliver ideas with great clarity

Note for Rate: 0 = non existing

USEFUL LINKS FOR PROJECT

Use Case links

https://www.uml-diagrams.org/use-case-diagrams.html
https://www.uml-diagrams.org/use-case-diagrams-examples.html
https://www.lucidchart.com/pages/uml-use-case-diagram
https://www.smartdraw.com/use-case-diagram/
https://online.visual-paradigm.com/tutorials/use-case-diagram-tutorial/

video

https://www.youtube.com/watch?v=zid-MVo7M-E

Activity diagram links

https://www.uml-diagrams.org/activity-diagrams-examples.html
https://www.lucidchart.com/pages/uml-activity-diagram
https://www.lucidchart.com/pages/swimlane-diagram
https://www.smartdraw.com/activity-diagram/examples/
https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-activity-diagram/

video

https://www.youtube.com/watch?v=yAihwmczqsk

ER diagram links

https://www.smartdraw.com/entity-relationship-diagram/
https://www.smartdraw.com/entity-relationship-diagram/examples/
https://creately.com/blog/diagrams/er-diagrams-tutorial/
http://www.cs.uregina.ca/Links/class-info/215/erd/

video

https://www.youtube.com/watch?v=QpdhBUYk7Kk
https://www.youtube.com/watch?v=-CuY5ADwn24
https://www.youtube.com/watch?v=c0_9Y8QAstg
https://www.youtube.com/watch?v=-fQ-bRllhXc

Class diagrams links

https://www.lucidchart.com/pages/uml-class-diagram
https://www.tutorialspoint.com/uml/uml_component_diagram.htm
https://www.smartdraw.com/class-diagram/
https://www.ibm.com/developerworks/rational/library/content/RationalEdge/sep04/bell/index.html
https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-class-diagram/

videos

https://www.youtube.com/watch?v=UI6lqHOVHic
https://www.youtube.com/watch?v=xiUFTLIU-lw
https://www.youtube.com/watch?v=ZyST6OFtb7k

State transition diagram links

http://www.cs.unc.edu/~stotts/145/CRC/state.html
https://www.stickyminds.com/article/state-transition-diagrams

https://www.smartdraw.com/state-diagram/
https://www.lucidchart.com/pages/uml-state-machine-diagram

videos

https://www.youtube.com/watch?v=PF9QcYWIsVE
https://www.youtube.com/watch?v=OsmWASXE2IM

Sequence diagram links

https://www.lucidchart.com/pages/uml-sequence-diagram
https://www.smartdraw.com/sequence-diagram/
https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-sequence-diagram/
https://www.ibm.com/developerworks/rational/library/3101.html

videos

https://www.youtube.com/watch?v=XIQKt5Bs7II
https://www.youtube.com/watch?v=cxG-qWthxt4
https://www.youtube.com/watch?v=18_kVIQMavE