
(posted 6 April 2005)

COMPREHENSIVE DESIGN REVIEW (CDR) (13 - 15 April 2005)

Notes

- CDR at lab benches before Faculty review board
- Same-old, same-old script:
 - 20 min - student presentation
 - 20 min - Q&A
- Use tri-fold poster board to illustrate/supplement physical demonstration
- CDR schedule below
- good luck (cvh and tbs)

COMPREHENSIVE DESIGN REVIEW (CDR)

(13 - 15 APRIL 2005)

Faculty Review Board Schedule

**at Lab Benches in Senior Design Project Lab (Marcus
10-12)**

updated 12 April 2005

Wed 13 April	Thur 14 April	Fri 15 April
9am Janaswamy, Wolf, Frasier	9am Looze, Wolf, Djaferis	9am Koren, Krishna moved to Tu 12th

		at 5.30pm
10am Muschinski, Soules, Frasier	10am Ganz, Oliaei, Ciesielski	10am Koren, Wolf, Ganz
11am Burleson, Soules, Krishna	11am Burleson, Oliaei, Ciesielski	11am Koren, Moritz, Ciesielski
Noon	Noon	noon Jackson, Hollot, Schaubert
1 pm Burleson, Muschinski, Ganz	1 pm Anderson, Preston, Fischetti	1 pm Gong, Jackson, Muschinski
2pm Wolf, Kelly, Fischetti	2pm Preston, Hollot	2pm Gong, Soules, Kundu, Schaubert
3pm Anderson, Krishna, Frasier, Kelly	3pm Hollot, Kundu, Yngvesson	3pm Gong, Jackson, Kundu
4pm Moritz, Krishna, Koren	4pm Anderson, Wolf, Kelly	4pm Soules, Moritz, Looze

COMPREHENSIVE DESIGN REVIEW (CDR)

(13 - 15 APRIL 2005)

Student Group Schedule

at Lab Benches in Senior Design Project Lab (Marcus 10-12)

Wed 13 April	Thur 14 April	Fri 15 April
9am Group Hollot & Soules	9am Group Hollot	9am Group Ciesielski moved to Tuesday the 12th, 5.30pm
10am Group Anderson	10am Group Kelly	10am Group Schaubert
11am Group	11am Group	11am Group Gao

Preston	Soules	
Noon	Noon	noon Group Frasier
1 pm Group Yngvesson	1 pm Group Oliaei	1 pm Group Kilmer
2pm Group Janaswamy	2pm Group Looze	2pm Group Jackson
3pm Group Moritz	3pm Group Burleson	3pm Group Ganz
4pm Group Muschinski	4pm Group Gong	4pm Group Wolf

(posted 2 March 2005)

PROGRESSUS DEMONSTRANDUM RECENSEO (PDR2) (7 - 9 March 2005)

NEW! audio clip describing PDR2 structure
[PDR2_announcement.mp3](#)

PROGRESSUS DEMONSTRANDUM RECENSEO
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(7 - 9 MARCH 2005)

Faculty Review Board Schedule

at Lab Benches in Senior Design Project Lab (Marcus
10-12)

updated 3 March 2005

Mon 7 March	Tue 8 March	Wed 9 March
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9am Janaswamy, Wolf	9am Gao, Looze, Schaubert	9am Koren, Krishna, Ganz
10am Wolf, Preston	10am Ganz, Oliaei, Gao	10am Koren, Wolf, Ganz
11am Burleson, Soules, Krishna	11am Burleson, Oliaei	11am Koren, Moritz
Noon	Noon	noon Jackson, Hollot
1 pm Burleson, Muschinski	1 pm Anderson, Gao	1 pm Gong, Jackson, Muschinski
2pm Muschinski, Soules	2pm Schaubert	2pm Gong, Soules
3pm Anderson, Krishna,	3pm Schaubert, Hollot	3pm Gong, Jackson
4pm Moritz, Krishna, Koren	4pm Hollot, Wolf	4pm Soules, Moritz, Looze

PROGRESSUS DEMONSTRANDUM RECENSEO

(7 - 9 MARCH 2005)

Student Group Schedule

at Lab Benches in Senior Design Project Lab (Marcus 10-12)

Mon 7 March	Tue 8 March	Wed 9 March
9am Group Hollot & Soules	9am Group Hollot	9am Group Ciesielski
10am Group Janaswamy	10am Group Kelly	10am Group Schaubert
11am Group Preston	11am Group Soules	11am Group Gao
Noon	Noon	noon Group Frasier
1 pm Group	1 pm Group Oliaei	1 pm Group Kilmer

Yngvesson		
2pm Group Anderson	2pm Group Looze	2pm Group Jackson
3pm Group Moritz	3pm Group Burleson	3pm Group Ganz
4pm Group Muschinski	4pm Group Gong	4pm Group Wolf

posted 23 January 2005)

- All-Course Meeting, 4.00pm, Thursday, 27 January, GOES 20
- **Memo: Lab Security** and Parts Ordering ([click here](#))

(posted 03 December 2004)

- MDR: 8, 9, 10 December 2004 in Campus Center Meeting Rooms (schedule below)
- power point slides from 2 Dec, 2004 SDP05 lecture ([click here](#))

Mid-Term Design Review - **Faculty Review Board Schedule**

Campus Center Meeting Rooms

updated 7 Dec, 2004

Wed 8 Dec	Thur 9 Dec	Friday 10 Dec
9am Frasier, Tessier, Janaswamy	9am Gao, Ganz, Schaubert	9am Koren, Looze, Krishna
CC 801	CC 902	CC 801
10am Frasier,	10am Ganz,	10am Kelly,

Kelly, Tessier CC 802	Oliaei, Soules CC 903	Koren, Looze CC 802
11am Burleson, Tessier, Soules CC 801	11am Burleson, Oliaei, Gao CC 902	11am Koren, Looze, Moritz CC 801
Noon	Noon	noon CC 802 Jackson, Oliaei, Hollot
1 pm Burleson, Hollot, Muschinski CC 802	1 pm Anderson, Wolf, Ciesielski CC 903	1 pm Gong, Jackson, Muschinski CC 801
2pm Janaswamy, Muschinski, Soules CC 801	2pm Schaubert, Wolf, Ciesielski CC 902	2pm Gong, Yngvesson, Soules CC 802
3pm Anderson, Krishna, Ciesielski CC 802	3pm Schaubert, Hollot, Gao CC 903	3pm Gong, Jackson, Yngvesson CC 801
4pm Moritz, Krishna, Koren CC 801	4pm Hollot, Wolf, Krishna CC 902	4pm Soules, Moritz, Kelly CC 802

Mid-Term Design Review - **Student Team Schedule**

Campus Center Meeting Rooms

Wed 8 Dec	Thur 9 Dec	Friday 10 Dec
9am Group Hollot & Soules CC 801	9am Group Hollot CC 902	9am Group Ciesielski CC 801
10am Group	10am Group	10am Group

Janaswamy CC 802	Kelly CC 903	Schaubert CC 802
11am Group Preston CC 801	11am Group Soules CC 902	11am Group Gao CC 801
Noon	Noon	noon Group Frasier CC 802
1 pm Group Yngvesson CC 802	1 pm Group Oliaei CC 903	1 pm Group Kilmer CC 801
2pm Group Anderson CC 801	2pm Group Looze CC 902	2pm Group Jackson CC 802
3pm Group Moritz CC 802	3pm Group Burleson CC 903	3pm Group Ganz CC 801
4pm Group Muschinski CC 801	4pm Group Gong CC 902	4pm Group Wolf CC 802

MDR SPECS

aka "the December'04 deliverables"

updated 3 Dec, 2004

Group	The MDR Spec
Group Anderson	Assembled test enclosure with sensors, interior lighting, PV panel, and ventilation fan.- Some preliminary test data.- Refined plans for remainder of project.
Group Burleson	<ol style="list-style-type: none"> 1) A working back end environment (including a issuing, authorization, proxy servers) 2) A security plan and basic implementation on the back end environment 3) A computer simulated front end transmitting data to the back end.

	4) Proof of concept that a bar code can be scanned off a cell phone screen (using a scanner not a bar code reader).
Group Ciesielski	1. Embedded microphone in stethoscope 2. Capture an audible heartbeat 3. Save audio file in a compressed format
Group Frasier	All analog components other than the LPF * Working sampling, but not synchronization * Acceptance of a synchronization method * Determining whether we need an FPGA for real-time control
Group Ganz	At MDR, our group will have a functioning ER1 robot that will execute simple test programs that we have written with the ER1's software. We will also have completely partitioned and defined (APIs) all the different elements of our project (the Blocks from the System block diagram). At this time each of us will be in the process of writing and testing code for a different section of the project.
Group Gao	1. Communication between RFID reader and tag (requiring an antenna) 2. Control of the RFID reader using the PIC 3. PC to PIC serial communication 4. Data transfer of tag's unique ID from tag to PC
Group Gong	1. Get Patron Queuing System completely functional. 2. Setup PQS at the Marcus Snack Shop for a 1 week period of data collection.
Group Hollot	1) Controlled injection based on cam sensor and mass air flow sensor measurements (working separately from the engine) 2) Oxygen sensor characterization
Group Hollot & Soules	For the MDR we will prototype a chess piece with the functionality of touch sensing and data transmission.
Group Jackson	We will have three ultrasonic receiver/transmitter pairs implemented along with their corresponding counters. The resulting three dimensional position will be

	<p>calculated by hand using the values in the counters. In addition, we will have an estimate of the latency expected in calculating the position, specifically, the time it takes for the Distance Computation Engine to calculate the position based on the values in the three counters. Lastly, we will provide data that shows the accuracy of the position detection calculations as well as the amount of error in the calculations.</p>
<p>Group Janaswamy</p>	<p>(1) Use a software program (Net Stumbler) together with the 802.11 adapter card to measure the time series of signal strength received from an access point. This will be done at various points in the physical area of interest. The average of the time series will be assigned as the signal strength value at a particular user location.</p> <p>(2) A means of extracting this signal from the user computer will be determined.</p> <p>(3) A wireless mechanism of transmitting the signal strength value back to the motor system will be determined. A thorough investigation will be conducted into the various possible schemes such as using acoustic signals or radio signals to accomplish this step. This data will then be used by the motor system to fix its azimuth position.</p>
<p>Group Kelly</p>	<p>* Output amplifier constructed and working.</p> <p>* At least one effect implemented on the DSP board and operational for real-time processing.</p> <p>* Code for equalizer and additional effects implemented on a PC (in MATLAB or C++) and operational for non-real time processing.</p>
<p>Group Kilmer</p>	<p>Completed Maze - includes entire painted maze and camera tripod</p> <p>Functional RC Control Unit - includes all hardware from serial port to remote control for the computer controlled car, along with software for microcontroller.</p>
<p>Group Looze</p>	<ul style="list-style-type: none"> • Camera Housing Built <ul style="list-style-type: none"> ○ enclosure ○ cold finger ○ window ○ tube and tube cap

	<ul style="list-style-type: none"> ○ fan and cooling design ● Electronics <ul style="list-style-type: none"> ○ control signals (the software sends signals to hardware, hardware sends voltages to pins on chip, the chip responds appropriately) ○ voltage regulation functioning on the interface card (Input voltages = 12V; VCC = 26V; according to TC-237 Spec sheet) ○ power supply capable of producing 26V and 3 amps ● Software <ul style="list-style-type: none"> ○ prototype GUI with basic functions such as chip integration time ○ output USB control signals needed to implement each function ● USB Interface <ul style="list-style-type: none"> ○ working electronics to decode chip signals from the USB ○ electronics to encode/control measurement signals to the USB interface
<p style="text-align: center;">Group Moritz</p>	<p>-To have a thorough knowledge of how the parts of the system work -To have the parts required and mostly assembled -To begin to understand how to work on the software aspect of the project and how to program AT style modem commands on Windows CE</p>
<p style="text-align: center;">Group Muschinski</p>	<p>We will have a clock unit that will keep time through a start and a stop interrupt. The clock will be accurate to the hundredth of a second, and will not wander more than 2 ms over the course of five minutes. We will also have the software built to allow us to</p>

	<p>communicate to the transceiver over a short distance. To demonstrate this communication we have two transceiver chips controlled by two PIC's. The received signal will light up a LED.</p>
Group Oliaei	<ol style="list-style-type: none"> 1) A working D/A converter 2) A functioning solenoid capable of levitation 3) A digital system for adjusting current through the solenoid
Group Preston	<p>At MDR we will complete replacement of the electronics for the robotic vacuum cleaner. This will include building the replacement circuits and completing simple functional tests. The new circuits will not be a bench top version (i.e. not fully installed in the robotic vacuum cleaner). Specifically:</p> <ul style="list-style-type: none"> • The control part of the pre-built robotic vacuum will be taken out and replaced with our own control unit, the pic microcontroller. • Any sensors which will not be re-used will be taken out and replaced. • The controller should be able to send/receive sonar sensor signals. • The controller should be able to receive touch sensor signals. • The controller should be able to turn the motors on/off. • The above circuitry will be documented.
Group Schaubert	<p>At MDR we will demonstrate a "Wireless Ruler." This system will be able to measure the distance between a stationary base unit and a stationary remote unit by transmitting a wave between the two units. The transmission and reception hardware for both units will be functioning on a breadboard. Input signals may be externally applied with signal generators. Signal processing hardware for extracting a distance from the received signals will also be breadboarded. The breadboarded prototype will also contain a storage unit capable of digitizing and storing the results of the analog communication. At MDR we will demonstrate that a value is being stored in the memory. We will show that the correct distance is produced when the value read from the memory is manually input into the offline algorithm that we have designed. Our MDR</p>

	deliverables will be accompanied by a characterization of their accuracy.s
Group Soules	1. A functioning Caller ID data decoder. The Caller ID data will be decoded and stored in a semiconductor memory device. This data will be verifiable using a Personal Computer running microcontroller development software. 2. A microcontroller with a minimally functional TCP/IP stack implemented so that it can respond to ping requests.
Group Wolf	1) Functional sonar sensor 2) Platform interface to control vehicle 3) Specification of control behavior of follower vehicles
Group Yngvesson	The transceivers will be programmed and set to do the wireless data transmission and will be tested using a signal from a function generator. The monitor computer program will be programmed to get the values from the serial port (which is connected to the transceiver) and then stores it, displays it and then sets off an alarm in case the patients condition worsens. At this point the two parts will not be connected, they'll be made to work independent of each other and tested.

posted (28 November, 2004)

- Next all-course meeting: 4.00pm, Thursday, 2nd December, GOES 20

posted (30 October, 2004)

- Assignment: (due Thursday, 4th November) Teams and Faculty Advisors agree on MDR Specifications. Faculty Advisors email the agreed-upon specs to course coordinators. The received specs will then be posted on web table below.
 - No all-course meeting this week. Next all-course meeting: 4.00pm, Thursday, 2nd December, GOES 20
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Preliminary Design Review - **Faculty Review** Board Schedule

SDP LAB - Marcus Basement

Wed 27 Oct	Thurs 28 Oct	Friday 29 Oct
9am Frasier, Krishna, Tessier	9am Gao, Ganz, Soules	9am Koren, Looze
10am Frasier, Kelly, Tessier	10am Gao, Ganz, Yngvesson	10am Kelly, Koren, Looze
11am Burleson, Tessier	11am Burleson, Oliaei	11am Koren, Looze
Noon	Noon	Noon
1 pm Burleson, Janaswamy Muschinski	1 pm Anderson, Wolf	1 pm Gong, Jackson, Muschinski
2pm Janaswamy, Muschinski	2pm Schaubert, Wolf	2pm Gong, Yngvesson
3pm Anderson, Krishna	3pm Schaubert, Hollot	3pm Gong, Jackson
4pm Moritz, Krishna	4pm Hollot	4pm Soules

Preliminary Design Review - **Student Team** Schedule

SDP LAB - Marcus Basement

Wed 27 Oct	Thurs 28 Oct	Friday 29 Oct
9am Group Hollot & Soules	9am Group Hollot	9am Group Ciesielski
10am Group Janaswamy	10am Group Kelly	10am Group Schaubert
11am Group Preston	11am Group Soules	11am Group Gao
Noon	Noon	Noon
1 pm Group Yngvesson	1 pm Group Oliaei	1 pm Group Kilmer
2pm Group Anderson	2pm Group Looze	2pm Group Jackson

3pm	Group Moritz	3pm	Group Burleson	3pm	Group Ganz
4pm	Group Muschinski	4pm	Group Gong	4pm	Group Wolf

Professor Wolf's ppt slides "How to Give a Good PDR Presentation"

(posted 19 October, 2004)

- PDR delayed to October 27, 28, 29th
- New sign-up will start sometime after Friday 22 October
- All-course meeting 4pm, Thursday 21 October Goes 20. Guest Speaker: Professor Tilman Wolf will speak to the "Do's" and "Don'ts" of powerpoint presentations

(posted 17 October, 2004)

- **PDR overview**
 - At SDP05 Lab benches
 - Lab devoid of other teams
 - PDR Review Board (2 ECE Professors)
 - SDP05 Advisor strongly recommended to attend
 - Structure
 - 20min: presentation
 - 20min: Q & A
 - 10 min: Review Board deliberation
 - Attire (business casual)
- **PDR Sign-up Scheme**
 - email your advisors to determine their availability on Oct 20-22
 - Over the weekend, team managers sign-up at the electronic sign-up sheet: <http://www.hazyblue.net/ecesignup/sdp05/> .
- **Your PDR Presentation**
 - Have one hard copy of:
 - Statement of Problem
 - Requirements Specification

- Draft System Specification
 - **Power Point Outline**
 - Background and Motivation
 - The Deliverables
 - System Block Diagram
 - Specification of Blocks
 - Proposed MDR Specifications
-

(posted 12 October, 2004)

- Due at the next all-course meeting 4pm, GOES 20, Thursday October 14th:
 - The *Requirements Specification*, version 3, using page 134 as your template.
 - The *Draft System Block Diagram*, using page 148 as your template.
 - Due in your web space before morning of Monday Oct 18th:
 - Statement of the Problem
 - Requirements Specification
 - Draft System Specification
 - Coming soon: sign-up for PDR slots.
-

(posted 3 October, 2004)

- Course Coordinators "suggestion of the week: [submit/discuss a draft system block diagram](#) at this week's team-advisor meeting.
 - Assignment #2, "The Requirements Specification" is due in cvh's office door mailbox by 5pm, Monday, October 4th 2004.
 - All - course meeting 4pm, GOES 20, Thursday October 7th.
-

(posted: 28 September, 2004)

- Re-do last week's SDP05 assignment (Project's "Statement of the Problem"), and turn in at our next All-Course meeting, this Thursday, 30th September 2004. Use Salt and Rothery's case study as an example, or that of the [digital probe](#)

- Assignment #2, "The Requirements Specification" is delayed, and due in cvh's office door mailbox by 5pm, Monday, October 4th 2004.
- Homework assignment #2, due Th, 30th Sept in class: Your Team's: *Requirements Specification* - for grading cover sheet in .doc format ([click here](#)) ... see case study, pg. 134 of Salt and Rothery.
- Add content to your team's web page; e.g., post problem statement and requirements specification.
- see "[SDP05 Stuff](#)" for links to course syllabus, email list, lecture slides, etc.

(posted: 16 September, 2004)

- **Urgent: now that teams have formed, drop Hollot's 415 section; add your SDP05 team adviser's 415 section.**
- Homework assignment: needs assessment and problem statement for your project
- email your team manager's name to hollot@ecs.umass.ed and soules@ecs.umass.edu
- 415/416 syllabus ([click here](#))
- 16 September lecture on "problem statement" ([click here](#))

(posted: 16 September, 2004)

- **Urgent: now that teams have formed, drop Hollot's 415 section; add your SDP05 team adviser's 415 section.**
- Homework assignment: needs assessment and problem statement for your project
- email your team manager's name to hollot@ecs.umass.ed and soules@ecs.umass.edu
- 415/416 syllabus ([click here](#))
- 16 September lecture on "problem statement" ([click here](#))

(posted: 13 September, 2004)

- 415/416 Schedule-at-a glance ([click here](#))
- All-Course Meeting #2 - Thursday, 16 September, 4-5.15pm, Goessman 20.
- Assignment:
 - Read Chapters 1-3 of Salt and Rothery.
- Set weekly meeting time with adviser.
- Francis M. Caron (SDP Lab-Meister): Marcus 9A, fkaron@ecs.umass.edu, 5454578.
- Please check project-team summary below for accuracy

cvh and tbs