

LAMPIRAN

Lampiran 1 Surat Ketersediaan Pembimbing I

SURAT KESEDIAAN MEMBIMBING TA

Yang bertandatangan di bawah ini:

Nama : Miftakhul Huda, M.Kom
NIDN : 0620127801
NIPY : 04.007.033
Jabatan Struktural : -
Jabatan Fungsional : Lektor

Dengan ini menyatakan bersedia untuk menjadi pembimbing I pada Tugas Akhir mahasiswa berikut:

Nama : Saeful Imron
NIM : 23041027
Program Studi : D-3 Teknik Komputer
Judul TA : PENGEMBANGAN SISTEM PEMANTUAN
KEAMANAN GUDANG ELEKTRONIK
MENGUNAKAN LASER DAN ESP32 CAM

Demikian pernyataan ini dibuat agar dapat dilaksanakan sebagaimana mestinya.

Tegal, 29 April 2026

Mengetahui
Ka Prodi DIII Teknik Komputer,



Arif Rahman, SE, S.Pd, M.Kom.
NIPY. 05.016.291

Dosen Pembimbing I,

Miftakhul Huda, M.Kom
NIPY. 04.007.033

Lampiran 2 Surat Ketersediaan Pembimbing II

SURAT KESEDIAAN MEMBIMBING TA

Yang bertandatangan di bawah ini:

Nama : Achmad Sutanto, S.Kom, M.Tr.T
NIPY : 11.012.128
NIDN : 0618058902
Jabatan Struktural : Dosen Tetap
Jabatan Fungsional : Asisten Ahli

Dengan ini menyatakan bersedia untuk menjadi pembimbing II pada Tugas Akhir mahasiswa berikut:

Nama : Saeful Imron
NIM : 23041027
Program Studi : D-3 Teknik Komputer
Judul TA : PENGEMBANGAN SISTEM PEMANTUAN
KEAMANAN GUDANG ELEKTRONIK
MENGUNAKAN LASER DAN ESP32 CAM

Demikian pernyataan ini dibuat agar dapat dilaksanakan sebagaimana mestinya.

Tegal, 29 April 2026

Mengetahui
Ka Prodi DIII Teknik Komputer,



Arif Rakhman, SE, S.Pd, M.Kom.
NIPY. 05.016.291

Dosen Pembimbing II,

Achmad Sutanto, S.Kom, M.Tr.T
NIPY. 11.012.128

Lampiran 3 Surat Observasi

Nomor : 566.03/KOM-HN/II/2026
Lampiran : -
Perihal : Permohonan Izin Observasi Tugas Akhir (TA)

Kepada Yth.
Pimpinan Cahaya Elektrik
Di Jl. Teuku Umar No.183, Tegal Selatan, Kota Tegal

Dengan Hormat,

Sehubungan dengan tugas mata kuliah Tugas Akhir (TA) yang akan diselenggarakan di semester V Program Studi Diploma III Teknik Komputer Universitas Harkat Negeri, Maka dengan ini kami mengajukan izin observasi pengambilan data di Cahaya Elektrik yang Bapak / Ibu Pimpin, untuk kepentingan dalam pembuatan produk Tugas Akhir, dengan Mahasiswa sebagai berikut:

No	NIM	NAMA	NO HP
1	23041027	SAEFUL IMRON	085740996048
2	23041037	IMAN SUGIRO	085712776981

Demikian surat permohonan ini kami sampaikan atas izin dan kerjasamanya kami sampaikan terima kasih.

Tegal, 16 Maret 2026
Ka. Prodi DIII Teknik Komputer
Universitas Harkat Negeri

 Universitas
Harkat Negeri
DIII Teknik Komputer

Arif Rakhman SE, S.Pd, M.Kom
NIPY. 05.016.291

Lampiran 4 Foto Dokumentasi



Lampiran 5 Laporan Buku Bimbingan

laporan

No	HARI/ TANGGAL	URAIAN	TANDA TANGAN
1	27/4 2026	<u>Bab I Revisi</u> - Intro Bibliografi - Tata tulis paragraf <u>Bab II Revisi</u> - Tata tulis paragraf <u>Bab III Revisi</u> - Tata tulis - Metode Penelitian <u>Ulat Catatan</u>	
2	29/4 2026	<u>Bab I, II, III Aes</u> Metode Ulat catatan.	
3	12/6 2026	<u>Bab IV, V, VI</u> Revisi - Penyelesaian butir - Hasil Pengujian, Pendahuluan	

No	HARI/ TANGGAL	URAIAN	TANDA TANGAN
4	19/6 2026	Aes Bab IV, V, VI Start uji 18/6/2026	

PEMBIMBING II:

BIMBINGAN LAPORAN TA

No	HARI/ TANGGAL	URAIAN	TANDA TANGAN
1	26/5 2026	- Membenarkan paragraf 10 - Istilah asing - Paragraf teks - Keseluruhan teks dan gambar	
2	2/6 2026	- Istilah asing - Membenarkan paragraf	
3	3/6 2026	- Membenarkan cupi - Membenarkan Justifing	
4	4/6 2026	- Membenarkan Referensi - Membenarkan paragraf - Membenarkan layout	
5	5/6 2026	- Membenarkan kata yang sudah - Cek daftar literatur dan pagernya - Membenarkan Istilah asing	

No	HARI/ TANGGAL	URAIAN	TANDA TANGAN
6	8/6 2026	- Membenarkan Istilah asing - Membenarkan keseluruhan gambar - Membenarkan kebinaran	
7	9/6 2026	Sudah selesai BAB IV-VI Ara untuk didaftarkan tanggal 18/6 2026 Pg. 2 Ach. Sumart	

Lampiran 6 Source Code

```
dashboard.php
<?php
defined('BASEPATH') or exit('No direct script access allowed');

class Dashboard extends CI_Controller
{
    public function __construct()
    {
        parent::__construct();
        if (empty($this->session->userdata('data_login'))) {
            $this->session->set_flashdata('flash-error', 'Anda
Belum Login');
            redirect('auth', 'refresh');
        }

        $this->load->model('M_Admin', 'admin');
        $this->db->where('id', $this->session->userdata('id'));
        $this->dt_admin = $this->db->get('admin')->row();
    }

    public function index()
    {
        $data = [
            'title' => 'Dashboard',
            'page'   => 'backend/dashboard',
        ];
        $this->load->view('backend/index', $data);
    }

    public function getRealtime()
    {
        $this->db->order_by('id', 'desc');
        $data = $this->db->get('sensor', 1)->row();

        echo json_encode([
            'data' => $data ]);
    }

    public function grafik_realtime()
    {
        $this->db->order_by('id', 'desc');
        $data = $this->db->get('sensor', 20)->result();
        echo json_encode(array_reverse($data));
    }
}
```

```
data.php
<?php

defined('BASEPATH') or exit('No direct script access allowed');

use Twilio\Rest\Client;

class Data extends CI_Controller
```

```

{
    public function simpan()
    {
        $data = [
            'gambar' => null,
        ];

        $this->db->insert('rekap', $data);
        $insert_id = $this->db->insert_id();
        if ($insert_id) {
            $msg = $insert_id;
        } else {
            $msg = 'Gagal';
        }

        echo $msg;
    }

    public function checkGambar()
    {
        $id = $this->input->get('id');

        $this->db->where('id', $id);
        $data = $this->db->get('rekap')->row();

        if ($data->gambar == null) {
            echo 'Menunggu';
        } else {
            echo 'Selesai';
        }
    }

    public function getQueue()
    {
        $this->db->where('gambar', null);
        $this->db->order_by('id', 'desc');

        $data = $this->db->get('rekap', 1)->row();

        if ($data) {
            echo 'Ada gerakan';
        } else {
            echo 'Tidak ada gerakan';
        }
    }

    public function kirimGambar()
    {
        $this->db->where('gambar', null);
        $this->db->order_by('id', 'desc');

        $cek = $this->db->get('rekap', 1)->row();

        if ($cek) {
            $upload_foto = $_FILES['imageFile']['name'];
            if ($upload_foto) {

```

```

        $this->load->library('upload');
        $config['upload_path'] =
'./upload/gambar';
        $config['allowed_types'] =
'jpg|jpeg|png';
        $config['max_size']      = '10240';
        $config['remove_spaces'] = TRUE;
        $config['detect_mime']   = TRUE;
        $config['encrypt_name']  = TRUE;

        $this->load->library('upload', $config);
        $this->upload->initialize($config);

        if (!$this->upload-
>do_upload('imageFile')) {
            echo $this->upload-
>display_errors();
        } else {
            $upload_data = $this->upload-
>data();

            $data = [
                'gambar' =>
$upload_data['file_name'],
            ];

            $this->db->where('id', $cek->id);
            $update = $this->db-
>update('rekap', $data);

            if ($update) {
                $this-
>_sendPhoto($upload_data['file_name']);

                echo 'Sukses upload gambar';
            } else {
                echo 'Maaf, upload gambar
gagal!';
            }
        }
    } else {
        echo 'Tidak ada data!';
    }
}

private function _sendPhoto($gambar)
{
    $sid      = "AC46a1d0816ba31d762db50ae4c65ee3bb";
    $token    = "4e1d1d961a166c11ca6d501f2618cc91";
    $twilio = new Client($sid, $token);

    $mediaUrl = base_url('upload/gambar/' . $gambar);

    $twilio->messages
        ->create(

```

```

        "whatsapp:+6287781204153", // to
        array(
            "from" => "whatsapp:+14155238886",
            "body" => "Terdeteksi objek
gerak!",
            "mediaUrl" => [$mediaUrl]
        )
    );
}

public function a()
{
    $sid      = "AC46a1d0816ba31d762db50ae4c65ee3bb";
    $token    = "4e1d1d961a166c11ca6d501f2618cc91";
    $twilio = new Client($sid, $token);

    $to = "whatsapp:+6287781204153";
    $from = "whatsapp:+14155238886";
    $body = "Sample kirim WA";

    $message = $twilio->messages
        ->create(
            $to, // to
            array(
                "from" => $from,
                "body" => $body
            )
        );

    print($message->sid);
}

private function _sendNotif($msg)
{
    $sid      = "AC46a1d0816ba31d762db50ae4c65ee3bb";
    $token    = "4e1d1d961a166c11ca6d501f2618cc91";
    $twilio = new Client($sid, $token);
    $body = $msg;

    $message = $twilio->messages
        ->create(
            $to, // to
            array(
                "from" => $from,
                "body" => $body
            )
        );
}

public function sensor()
{
    $suhu = $this->input->get('suhu');
    $kelembapan = $this->input->get('kelembapan');

    $data = [
        'suhu' => $suhu,

```

```

        'kelembapan' => $kelembapan
    ];

    $this->db->order_by('id', 'desc');
    $cek = $this->db->get('sensor', 1)->row();

    if ($cek) {
        if ($cek->suhu == $suhu && $cek->kelembapan ==
$kelembapan) {
            echo 'Data masih sama';
        } else {
            $this->db->insert('sensor', $data);

            if ($suhu >= 38) {
                $msg = "Suhu : " . $suhu . ',
Kelembapan Udara : ' . $kelembapan;
                $this->_sendNotif($msg);
            }

            echo 'Data berhasil disimpan';
        }
    } else {
        $this->db->insert('sensor', $data);

        echo 'Data berhasil disimpan';
    }
}

public function api_simpan_sensor()
{
    // Set header response agar dibaca sebagai JSON
    header('Content-Type: application/json');

    // Coba mengambil input dari method POST ataupun GET
    $suhu = $this->input->post('suhu') ?? $this->input-
>get('suhu');
    $kelembapan = $this->input->post('kelembapan') ??
$this->input->get('kelembapan');

    // Jika kosong, coba ambil dari raw JSON body (biasa
digunakan pada HTTP POST dari IoT/Postman)
    if (!$suhu || !$kelembapan) {
        $json = file_get_contents('php://input');
        $data_json = json_decode($json);
        $suhu = $data_json->suhu ?? $suhu;
        $kelembapan = $data_json->kelembapan ??
$kelembapan;
    }

    // Validasi input
    if ($suhu === null || $kelembapan === null) {
        echo json_encode(['status' => false, 'message'
=> 'Suhu dan kelembapan wajib diisi!']);
        return;
    }
}

```

```

        $data = [
            'suhu' => $suhu,
            'kelembapan' => $kelembapan
        ];

        $this->db->order_by('id', 'desc');
        $cek = $this->db->get('sensor', 1)->row();

        if ($cek && $cek->suhu == $suhu && $cek->kelembapan
== $kelembapan) {
            echo json_encode(['status' => true, 'message'
=> 'Data masih sama, tidak ada insert baru']);
        } else {
            $this->db->insert('sensor', $data);
            if ($suhu >= 38) {
                $msg = "Peringatan! Suhu : " . $suhu .
', Kelembapan Udara : ' . $kelembapan;
                $this->_sendNotif($msg);
            }
            echo json_encode(['status' => true, 'message'
=> 'Data berhasil disimpan']);
        }
    }

    public function api_update_ip()
    {
        // Set header response agar dibaca sebagai JSON
        header('Content-Type: application/json');

        $ip          = $this->input->get('ip_address') ??
$this->input->post('ip_address');

        // Jika kosong, coba ambil dari raw JSON body
        if (!$ip) {
            $json = file_get_contents('php://input');
            $data_json = json_decode($json);
            $ip = $data_json->ip_address ?? $ip;
        }

        if (!$ip) {
            echo json_encode(['status' => false, 'message'
=> 'IP address tidak boleh kosong']);
            return;
        }

        $data = [
            'ip'      => $ip
        ];

        $this->db->where('id', 1);
        $this->db->update('setting', $data);

        echo json_encode(['status' => true, 'message' =>
'Update IP sukses']);
    }

```

```

public function api_upload_foto()
{
    // Set header response agar dibaca sebagai JSON
    header('Content-Type: application/json');

    $file_name = null;
    $upload_success = false;

    // 1. Cek apakah menggunakan metode multipart/form-
data ($_FILES)
    if (!empty($_FILES['imageFile']['name'])) {
        $this->load->library('upload');
        $config['upload_path'] = './upload/gambar';
        $config['allowed_types'] = 'jpg|jpeg|png';
        $config['max_size'] = '10240';
        $config['remove_spaces'] = TRUE;
        $config['encrypt_name'] = TRUE;

        $this->upload->initialize($config);

        if ($this->upload->do_upload('imageFile')) {
            $upload_data = $this->upload->data();
            $file_name = $upload_data['file_name'];
            $upload_success = true;
        } else {
            http_response_code(400);
            echo json_encode(['status' => false,
'message' => strip_tags($this->upload->display_errors())]);
            return;
        }
    }
    // 2. Jika $_FILES kosong, coba ambil raw binary
data (digunakan oleh ESP32 HTTPClient sendRequest)
    else {
        $raw_data = file_get_contents('php://input');
        if (!empty($raw_data)) {
            $file_name = md5(uniqid(rand(), true)) .
'.jpg';
            if (file_put_contents('./upload/gambar/'
. $file_name, $raw_data)) {
                $upload_success = true;
            }
        }
    }

    if ($upload_success && $file_name) {
        $this->db->where('gambar', null);
        $this->db->order_by('id', 'desc');
        $cek = $this->db->get('rekap', 1)->row();

        if ($cek) {
            $this->db->where('id', $cek->id);
            $this->db->update('rekap', ['gambar' =>
$file_name]);
        } else {

```

```

        $this->db->insert('rekap', ['gambar' =>
$file_name]);
    }

    echo json_encode(['status' => true, 'message'
=> 'Upload foto sukses', 'file_name' => $file_name]);
    } else {
        http_response_code(400);
        echo json_encode(['status' => false, 'message'
=> 'Tidak ada file gambar yang diupload']);
    }
}

public function api_upload_capture()
{
    // Set header response agar dibaca sebagai JSON
    header('Content-Type: application/json');

    $file_name = null;
    $upload_success = false;

    // 1. Cek apakah menggunakan metode multipart/form-
data ($_FILES)
    if (!empty($_FILES['imageFile']['name'])) {
        $this->load->library('upload');
        $config['upload_path']    = './upload/gambar';
        $config['allowed_types'] = 'jpg|jpeg|png';
        $config['max_size']       = '10240';
        $config['remove_spaces'] = TRUE;
        $config['encrypt_name']  = TRUE;

        $this->upload->initialize($config);

        if ($this->upload->do_upload('imageFile')) {
            $upload_data = $this->upload->data();
            $file_name = $upload_data['file_name'];
            $upload_success = true;
        } else {
            http_response_code(400);
            echo json_encode(['status' => false,
'message' => strip_tags($this->upload->display_errors())]);
            return;
        }
    }

    // 2. Jika $_FILES kosong, coba ambil raw binary
data (digunakan oleh ESP32 HTTPClient sendRequest)
    else {
        $raw_data = file_get_contents('php://input');
        if (!empty($raw_data)) {
            $file_name = md5(uniqid(rand(), true)) .
'.jpg';
            if (file_put_contents('./upload/gambar/'
. $file_name, $raw_data)) {
                $upload_success = true;
            }
        }
    }
}

```

```

    }

    if ($upload_success && $file_name) {
        $this->db->insert('capture', ['gambar' =>
$file_name]);

        echo json_encode(['status' => true, 'message'
=> 'Upload foto sukses', 'file_name' => $file_name]);
    } else {
        http_response_code(400);
        echo json_encode(['status' => false, 'message'
=> 'Tidak ada file gambar yang diupload']);
    }
}

public function notifPir()
{
    $msg = "Terdeteksi pergerakan didalam rumah";
    $this->_sendNotif($msg);
    echo 'Notif berhasil dikirim';
}
}

/* End of file Data.php */

```

```

auth.php
<?php
defined('BASEPATH') or exit('No direct script access allowed');

class Auth extends CI_Controller
{
    public function __construct() {
        parent::__construct();
        if (!empty($this->session->userdata('data_login'))) {
            if ($this->uri->segment(2) != 'logout') {
                redirect('dashboard');
            }
        }
    }

    public function index()
    {
        $data = [
            'title' => 'Halaman Login',
            'page' => 'auth/login'
        ];

        $this->load->view('auth/index', $data);
    }

    public function proses()
    {
        $username = $this->input->post("username");
        $password = $this->input->post("password");
        $this->load->model('M_Login', 'login');
    }
}

```

```

        $a = $this->login->cek_login($username, $password);

        if ($a == 'Valid') {
            $this->session->set_flashdata('flash-sukses', 'Login
Sukses');
            redirect('dashboard', 'refresh');
        } else {
            $this->session->set_flashdata('flash-error', 'Login
Gagal');
            redirect('auth', 'refresh');
        }
    }

    public function logout() {
        $this->session->sess_destroy($this->session-
>userdata('data_login'));
        redirect('auth', 'refresh');
    }
}

```