

# API Reference Guide

Complete reference for all API endpoints in the Homework Assignment System.

## Base URL

```
Development: http://localhost:3000/api
Production: https://your-domain.com/api
```

## Authentication

Most endpoints require authentication via session cookies. After successful login, the session token is automatically included in subsequent requests.

### Session Cookie:

```
Cookie: session-token=JWT_TOKEN
```

## API Endpoints Overview

Method	Endpoint	Description	Auth Required
POST	/auth/register	Create teacher account	No
POST	/auth/login	Teacher login	No
POST	/auth/logout	End session	Yes
GET	/assignments	List assignments	Yes
POST	/assignments	Create assignment	Yes
PATCH	/assignments/{id}	Update assignment	Yes
DELETE	/assignments/{id}	Delete assignment	Yes
GET	/assignments/{id}/download	Download submissions	Yes
POST	/student/access	Access assignment	No
POST	/student/save	Save draft	No
POST	/student/submit	Submit final	No

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## Authentication Endpoints

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### POST /auth/register

Create a new teacher account.

#### Request:

```
POST /api/auth/register
Content-Type: application/json

{
  "username": "teacher_username",
  "password": "secure_password"
}
```

#### Validation Rules:

- username : 3-50 characters, alphanumeric + underscore only
- password : 8+ characters minimum

#### Success Response (201):

```
{
  "success": true,
  "message": "Teacher account created successfully",
  "teacher": {
    "id": "c1h7x8y9z0123456789",
    "username": "teacher_username"
  }
}
```

#### Error Responses:

```
// Username already exists (409)
{
  "error": "Username already exists"
}

// Invalid input (400)
{
  "error": "Username must be between 3-50 characters"
}

// Server error (500)
{
  "error": "Internal server error"
}
```

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### POST /auth/login

Authenticate teacher and create session.

#### Request:

```
POST /api/auth/login
Content-Type: application/json

{
  "username": "teacher_username",
  "password": "secure_password"
}
```

#### Success Response (200):

```
{
  "success": true,
  "teacher": {
    "id": "clh7x8y9z0123456789",
    "username": "teacher_username",
    "active_sessions_count": 2
  }
}
```

#### Response Headers:

```
Set-Cookie: session-token=eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9...; HttpOnly; Secure;
SameSite=Lax; Max-Age=7200
```

#### Error Responses:

```
// Invalid credentials (401)
{
  "error": "Invalid credentials or account is locked"
}

// Account locked (401)
{
  "error": "Account temporarily locked due to too many failed attempts"
}
```

## POST /auth/logout

End current session.

#### Request:

```
POST /api/auth/logout
Cookie: session-token=JWT_TOKEN
```

#### Success Response (200):

```
{
  "success": true
}
```

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## Assignment Management Endpoints

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### GET /assignments

Retrieve all assignments for authenticated teacher.

#### Request:

```
GET /api/assignments
Cookie: session-token=JWT_TOKEN
```

#### Success Response (200):

```
{
  "assignments": [
    {
      "id": "assignment_id_123",
      "title": "Essay Assignment",
      "assignment_code": "ABC123",
      "status": "active",
      "created_at": "2024-09-16T10:00:00.000Z",
      "activated_at": "2024-09-16T10:05:00.000Z",
      "closed_at": null,
      "student_count": 15,
      "max_students": 30,
      "student_work": [
        {
          "id": "work_id_456",
          "student_name": "John Doe",
          "status": "submitted",
          "last_saved_at": "2024-09-16T11:30:00.000Z",
          "submitted_at": "2024-09-16T11:35:00.000Z",
          "word_count": 487
        }
      ]
    }
  ]
}
```

#### Assignment Status Values:

- `draft` - Not yet activated
- `active` - Currently accepting students
- `closed` - No longer accepting new work

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### POST /assignments

Create a new assignment.

#### Request:

```

POST /api/assignments
Content-Type: application/json
Cookie: session-token=JWT_TOKEN

{
  "title": "Essay on Climate Change",
  "content": "Write a 500-word essay discussing the impacts of climate change on modern society...",
  "instructions": "Please ensure your essay is well-structured with clear arguments.",
  "deadline": "2024-09-20T23:59:59.000Z"
}

```

#### Field Requirements:

- title : 5-100 characters (required)
- content : 10-50,000 characters (required)
- instructions : Optional, up to 10,000 characters
- deadline : Optional ISO datetime string

#### Success Response (200):

```

{
  "success": true,
  "assignment": {
    "id": "new_assignment_id",
    "title": "Essay on Climate Change",
    "assignment_code": "XYZ789",
    "status": "active"
  }
}

```

#### Error Responses:

```

// Session limit reached (409)
{
  "error": "You have reached the maximum of 3 active assignments. Please close an existing assignment first."
}

// Invalid input (400)
{
  "error": "Title and content are required"
}

```

## PATCH /assignments/{id}

Update assignment status (close/reopen).

#### Request:

```
PATCH /api/assignments/assignment_id_123
Content-Type: application/json
Cookie: session-token=JWT_TOKEN

{
  "action": "close"
}
```

**Actions:**

- close - Close active assignment
- reopen - Reactivate closed assignment

**Success Response (200):**

```
{
  "success": true,
  "message": "Assignment closed"
}
```

**Error Responses:**

```
// Cannot reopen due to limit (409)
{
  "error": "Cannot reopen: Maximum of 3 active assignments reached"
}

// Assignment not found (404)
{
  "error": "Assignment not found"
}
```

**DELETE /assignments/{id}**


Permanently delete assignment and all student work.

**Request:**

```
DELETE /api/assignments/assignment_id_123
Cookie: session-token=JWT_TOKEN
```

**Success Response (200):**

```
{
  "success": true,
  "message": "Assignment deleted"
}
```

 **Warning:** This action is irreversible and deletes all associated student work.

## GET /assignments/{id}/download

Download student submissions.

### Request:

```
GET /api/assignments/assignment_id_123/download?type=bulk
Cookie: session-token=JWT_TOKEN
```

### Query Parameters:

- type : Download type
- all - All submissions (default)
- drafts - Draft submissions only
- submitted - Final submissions only
- bulk - Force ZIP download
- student - Specific student name for individual download

### Response Types:

#### Single File (text/plain):

```
Content-Type: text/plain
Content-Disposition: attachment; filename="John Doe 2024-09-16 SUBMITTED.txt"

HOMEWORK ASSIGNMENT SUBMISSION
=====
Assignment: Essay on Climate Change
Student: John Doe
Status: SUBMITTED
Word Count: 487
...
```

#### ZIP Archive (application/zip):

```
Content-Type: application/zip
Content-Disposition: attachment; filename="Essay_on_Climate_Change_submissions_2024-09-16.zip"

[Binary ZIP data containing multiple submission files]
```

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## Student Endpoints

### POST /student/access

Access assignment using code and student name.

### Request:

```
POST /api/student/access
Content-Type: application/json

{
  "studentName": "Jane Smith",
  "assignmentCode": "ABC123"
}
```

**Validation Rules:**

- studentName : 2-50 characters, letters and spaces only
- assignmentCode : 6 characters, case-insensitive

**Success Response (200):**

```
{
  "assignment": {
    "id": "assignment_id_123",
    "title": "Essay on Climate Change",
    "content": "Write a 500-word essay discussing...",
    "instructions": "Please ensure your essay is well-structured..."
  },
  "studentWork": {
    "id": "student_work_id_789",
    "content": "Previously saved draft content...",
    "status": "draft",
    "word_count": 123
  },
  "isReturning": true,
  "isSubmitted": false
}
```

**Error Responses:**

```
// Assignment not found (404)
{
  "error": "Assignment not found. Please check the assignment code."
}

// Assignment closed (403)
{
  "error": "This assignment is not currently available."
}

// Capacity reached (403)
{
  "error": "This assignment has reached its maximum capacity of 30 students."
}

// Invalid student name (400)
{
  "error": "Student name can only contain letters and spaces"
}
```

---



## POST /student/save

Save draft work (auto-save or manual save).

### Request:

```
POST /api/student/save
Content-Type: application/json

{
  "studentWorkId": "student_work_id_789",
  "content": "This is my essay draft content. It covers the topic of climate change..."
}
```

### Success Response (200):

```
{
  "success": true,
  "studentWork": {
    "id": "student_work_id_789",
    "content": "This is my essay draft content...",
    "word_count": 156,
    "last_saved_at": "2024-09-16T14:30:00.000Z",
    "status": "draft"
  },
  "message": "Draft saved successfully"
}
```

### Error Responses:

```
// Assignment closed (403)
{
  "error": "Assignment is no longer active"
}

// Already submitted (403)
{
  "error": "Work has already been submitted and cannot be modified"
}

// Student work not found (404)
{
  "error": "Student work not found"
}
```

---

## POST /student/submit

Submit final answer (one-time only).

### Request:

```
POST /api/student/submit
Content-Type: application/json

{
  "studentWorkId": "student_work_id_789",
  "content": "This is my final essay submission about climate change and its im-
pacts..."
}
```

**Success Response (200):**

```
{
  "success": true,
  "studentWork": {
    "id": "student_work_id_789",
    "content": "This is my final essay submission...",
    "word_count": 523,
    "status": "submitted",
    "submitted_at": "2024-09-16T15:45:00.000Z"
  },
  "message": "Assignment submitted successfully!"
}
```

**Error Responses:**

```
// Already submitted (403)
{
  "error": "Work has already been submitted"
}

// Assignment closed (403)
{
  "error": "Assignment is no longer active"
}
```

---



## Response Status Codes

Code	Meaning	Usage
200	OK	Successful request
201	Created	Resource created successfully
400	Bad Request	Invalid input data
401	Unauthorized	Authentication required/failed
403	Forbidden	Access denied or capacity reached
404	Not Found	Resource doesn't exist
409	Conflict	Resource exists or limit reached
429	Too Many Requests	Rate limit exceeded
500	Internal Server Error	Unexpected server error



## Security Considerations

### Rate Limiting

- **Login attempts:** 5 per 15 minutes per IP
- **API calls:** 100 per minute per session
- **File uploads:** 10 per hour per teacher

### Data Validation

- All inputs are validated server-side
- SQL injection prevention via parameterized queries
- XSS prevention through input sanitization
- File upload restrictions (type, size)

### Session Management

- JWT tokens expire after 2 hours
- HTTP-only cookies for security
- Secure flag in production
- SameSite protection against CSRF

## Testing Examples

### Test Authentication Flow

```
# Register new teacher
curl -X POST http://localhost:3000/api/auth/register \
  -H "Content-Type: application/json" \
  -d '{"username":"testteacher","password":"password123"}'

# Login
curl -X POST http://localhost:3000/api/auth/login \
  -H "Content-Type: application/json" \
  -d '{"username":"testteacher","password":"password123"}' \
  -c cookies.txt

# Create assignment (using saved cookies)
curl -X POST http://localhost:3000/api/assignments \
  -H "Content-Type: application/json" \
  -b cookies.txt \
  -d '{"title":"Test Assignment","content":"Write about your favorite topic"}'
```

### Test Student Flow

```
# Access assignment
curl -X POST http://localhost:3000/api/student/access \
  -H "Content-Type: application/json" \
  -d '{"studentName":"John Doe","assignmentCode":"ABC123"}'

# Save draft
curl -X POST http://localhost:3000/api/student/save \
  -H "Content-Type: application/json" \
  -d '{"studentWorkId":"work_id","content":"My draft content"}'

# Submit final
curl -X POST http://localhost:3000/api/student/submit \
  -H "Content-Type: application/json" \
  -d '{"studentWorkId":"work_id","content":"My final submission"}'
```

For additional technical details, see the [Technical Specification](#) (TECH\_SPEC.md) document.